ARMY RESEARCH LABORATORY

Forecast Model and Product Assessment Project User's Guide

by John Raby, Robert Brown, Yasmina Raby

ARL-SR-0225 May 2011

NOTICES

Disclaimers

Army Research Laboratory
White Sands Missile Range, NM 88002-5501

ARL-SR-0225 **May 2011**

Forecast Model and Product Assessment Project User's Guide

John Raby, Robert Brown, and Yasmina Raby
Computational and Information Sciences Directorate, ARL

REPORT DOCUMENTATION PAGE						*Form Approved* *OMB No. 0704-0188*

1. REPORT DATE *(DD-MM-YYYY)*	**2. REPORT TYPE**	**3. DATES COVERED (From - To)**
May 2011	Final	October 2009−January 2011

4. TITLE AND SUBTITLE Forecast Model and Product Assessment Project User's Guide	**5a. CONTRACT NUMBER** **5b. GRANT NUMBER** **5c. PROGRAM ELEMENT NUMBER**
6. AUTHOR(S) John Raby, Robert Brown, and Yasmina Raby	**5d. PROJECT NUMBER** **5e. TASK NUMBER** **5f. WORK UNIT NUMBER**
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) U.S. Army Research Laboratory Battlefield Environment Division Computational and Information Sciences Directorate (ATTN: RDRL-CIE-M) White Sands Missile Range, NM 88002-5501	**8. PERFORMING ORGANIZATION REPORT NUMBER** ARL-SR-0225
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)	**10. SPONSOR/MONITOR'S ACRONYM(S)** **11. SPONSOR/MONITOR'S REPORT NUMBER(S)**

12. DISTRIBUTION/AVAILABILITY STATEMENT

Approved for public release; distribution is unlimited.

13. SUPPLEMENTARY NOTES

14. ABSTRACT

The Mission Execution Modeling Team of the U.S. Army Research Laboratory (ARL) has a project to determine the accuracy and value added of the weather models and decision support tools under development. To accomplish this, the team has developed the capability to produce model validation statistics using National Center for Atmospheric Research (NCAR) Model Evaluation Tools (MET) software. The MET Point-Stat tool compares weather model output from the Weather Research and Forecast (WRF) model to point weather observations collected from the Meteorological Assimilation Data Ingest System (MADIS) and the National Centers for Environmental Prediction (NCEP) PrepBUFR data source. The Point-Stat tool calculates error statistics on the performance of WRF forecasts. The MET Stat-Analysis tool aggregates and summarizes these statistics according to user determined criteria. The data from these summaries are extracted and imported into spreadsheets where they can be visualized in tables and graphs for further analysis. Execution of the data collection programs, MET software and the extraction programs requires the user to run approximately 100 scripts which collect, reformat, organize, execute and extract the results on local workstations and ARL High Performance Computers. To organize and track the process of running these scripts, this User's Guide was developed from internal procedures and checklists.

15. SUBJECT TERMS

WRF, forecast, validation, observation, statistics

16. SECURITY CLASSIFICATION OF:			**17. LIMITATION OF ABSTRACT**	**18. NUMBER OF PAGES**	**19a. NAME OF RESPONSIBLE PERSON**
					John Raby
a. REPORT	**b. ABSTRACT**	**c. THIS PAGE**			**19b. TELEPHONE NUMBER** (*Include area code*)
Unclassified	Unclassified	Unclassified	UU	334	(575) 678-2004

Standard Form 298 (Rev. 8/98)
Prescribed by ANSI Std. Z39.18

Contents

List of Figures

List of Tables

INTENTIONALLY LEFT BLANK.

1. Introduction

1.1 Objectives

The first of four goals of this project is to determine the effectiveness, accuracy, and value added of the weather models and the modifications of the models produced by the Nowcast Modeling Project.

The second goal is to determine the effectiveness, accuracy, and value added of the weather decision support tools under development by the Weather Impacts Risk Awareness Team.

The third goal is to implement Visual Analytics techniques and the use of the ParaView visualization software to identify Model Evaluation Tools (MET) "objects" based on parameter thresholds required by the MET software and the decision aid software.

The fourth goal is to apply visual analytics techniques to verify the Weather Research and Forecast (WRF) forecast output accuracy and as a forecaster aid.

This Applied Research Science and Technology activity will leverage the efforts of the Numerical Weather Prediction (NWP) community by using the MET. The MET is a set of verification tools developed by the WRF Developmental Testbed Center (DTC) for use by the numerical weather prediction community, especially users and developers of the WRF model, to help them assess and evaluate the performance of the model (National Center for Atmospheric Research, 2009).

The three main statistical analysis components of the current version of MET are named Point-Stat, Grid-Stat, and Method for Object-Based Diagnostic Evaluation (MODE).

The MET Point-Stat tool is used for grid-to-point verification, or verification of a gridded forecast field against point ground truth observations. The MET Point-Stat tool provides forecast verification scores for both continuous (e.g., temperature) and categorical (e.g., rain) variables, and confidence intervals are also produced. Confidence intervals take into account the uncertainty associated with verification statistics due to sampling variability and sample size limitations. The Grid-Stat tool produces verification statistics when a gridded field is used as the observational dataset. Like the Point-Stat tool, the Grid-Stat tool also produces confidence intervals. The MODE tool also uses gridded fields as observational datasets, defining objects in both the forecast and observation fields. The objects in the forecast and observation fields are then matched and compared to one another. MET Stat-Analysis takes the output from Point-Stat and aggregates it over a user-specified time, stratifies statistics based on time of day and WRF initialization time, and computes verification statistics and indices. The user is referred to the MET V2.0 User's Guide for a complete description of MET (National Center for Atmospheric Research, 2009).

The ground truth point observation data include surface weather observations from the Surface aviation meteorological observation (METAR), mesonet and synoptic reporting stations, Rawinsonde upper air Observations (RAOB) reporting stations, aircraft reports and Aircraft Communications Addressing and Reporting System (ACARS) observations. METAR, RAOB, aircraft and ACARS data are received in the form of ADPSFC, ADPUPA, AIRCFT and AIRCAR message types from the National Centers for Environmental Prediction (NCEP) PrepBUFR data source. The mesonet data are received as ADPSFC messages from the Meteorological Assimilation Data Ingest System (MADIS). The meteorological variables retained for model comparison from these observations are the following:

- Temperature ([TMP], degrees Kelvin)
- Dew point temperature ([DPT], degrees Kelvin)
- Relative humidity ([RH], percent)
- Mean sea level pressure ([PRMSL], hectopascals)
- U-component wind speed ([UGRD], meters/second)
- V-component wind speed ([VGRD], meters/second)
- Wind speed ([WIND], meters/second)
- Geopotential height ([HGT], geopotential meters)

1.2 Relevance

This project is an ambitious effort to make a quantitative assessment of the modeling work currently underway by the U.S. Army Research Laboratory (ARL), as well as the entire met modeling community. Upon completion, we should be able to provide a quantitative assessment of the "value added" of the ongoing work to our Army customers and ARL management. This effort will also provide feedback to the modelers and decision support tool developers on the strengths and weaknesses of the models and tools, noting areas that need further work and improvement.

1.3 Background and Statement of Problem

Weather forecast validation has always been of interest to the weather forecasting community and this interest has shifted from the accuracy of human forecasters to the accuracy of the computer-driven NWP.

The validation of the models, especially high resolution models produced by the NWP community, has proven to be especially difficult when addressing small time and space scales. This problem focuses on the ability, or lack thereof, to generate verification statistics that compare the model output to actual observations. This difficulty is also apparent when high resolution verification requires time and spatial forecast verification. A model, for example, may

predict rain in a certain area at a specified time. Did the forecast successfully "hit" if it did rain at the specified time but missed the intended area or if it rained at the intended area but missed the time by several hours?

The validation efforts are further complicated by the necessity of measuring the validity of non-traditional forecasts, such as probabilistic and ensemble forecasts. These methods must also address the propriety and equitability of the verification measures, as well as verification of extreme or rare events.

The validation and assessment of the WRF forecast model is a high priority for the NWP community so there is a strong effort to develop consistent methods to evaluate the models and then enhance the models based on these assessments. The Nowcast Modeling Project uses WRF as its primary NWP model.

This User's Guide was based on a pre-existing internal user's guide and procedures document, which were developed to enable the authors to organize the collection and production of model assessment data and statistics. Without these guides, maintaining configuration control of the 97 scripts and configuration files and keeping track of the complex process in the generation of the required data and statistics for two locations, using numerical forecasts generated by seven different variations of the WRF model, using three WRF model resolution/domain combinations and various types of statistical summaries has proven to be a difficult task. This User's Guide combines the internal documents into one cohesive document to assist future users of this process. Given that these processes necessarily change, this guide must be a living document and will require periodic revisions to keep it up to date. Thus, this guide represents a snapshot of the current process and tools, which are used in this project. Users are encouraged to provide feedback to the authors on the accuracy of the content of this guide and its effectiveness in conveying the information necessary to successfully execute the procedures to produce the desired results. The intent is to use such feedback to improve the guide and publish updated versions in future reports.

2. Model Assessment Process

The model assessment process has five major steps: (1) run or acquire the 3-km and 1-km resolution WRF model output over two predetermined nested geographic domains to create gridded forecast fields, (2) acquire PrepBUFR and MADIS observed ground truth measurements for the two domains and for the valid times of the model run, (3) use MET Point-Stat to compare the forecast field to the observations for each domain and calculate the error statistics of the comparison, (4) use MET Stat-Analysis to aggregate and summarize the statistical results, and (5) extract the statistical results for display and analysis. Figures 1 though 3 present a description of the model assessment process.

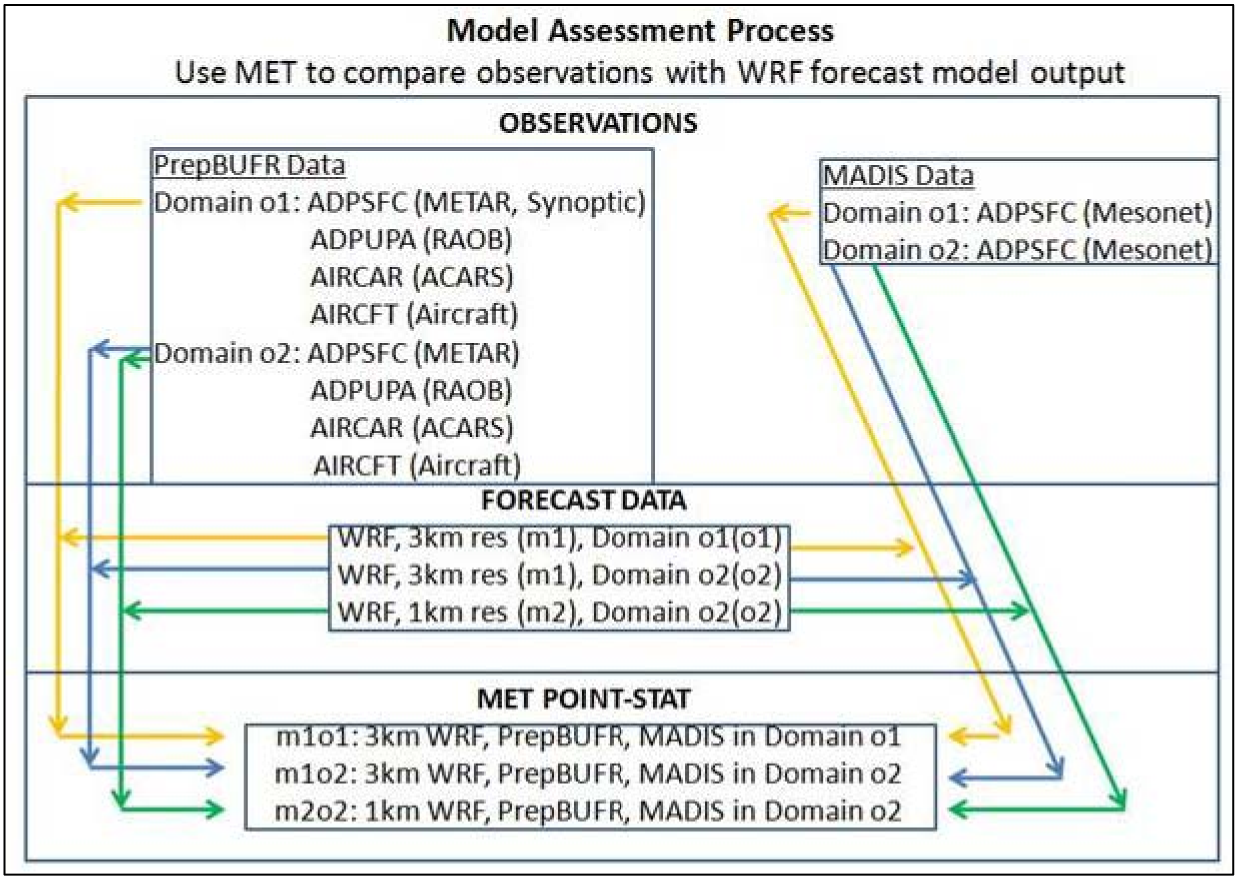

Figure 1. Collection of ground truth observations and WRF forecasts for domains 1 and 2 for input to MET Point-Stat.

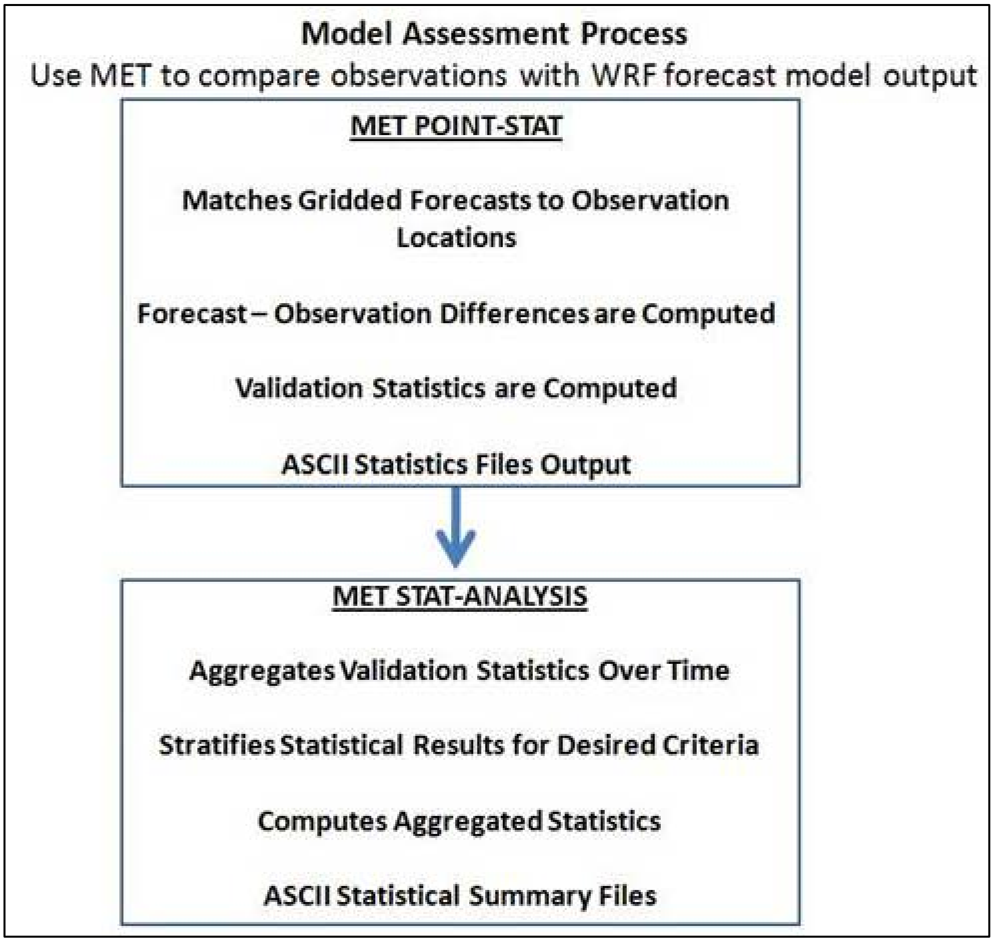

Figure 2. MET Point-Stat produces forecast error statistics and MET Stat-Analysis reads Point-Stat output and produces statistical summaries for the three model resolution/domain combinations (m1o1, m1o2, m2o2).

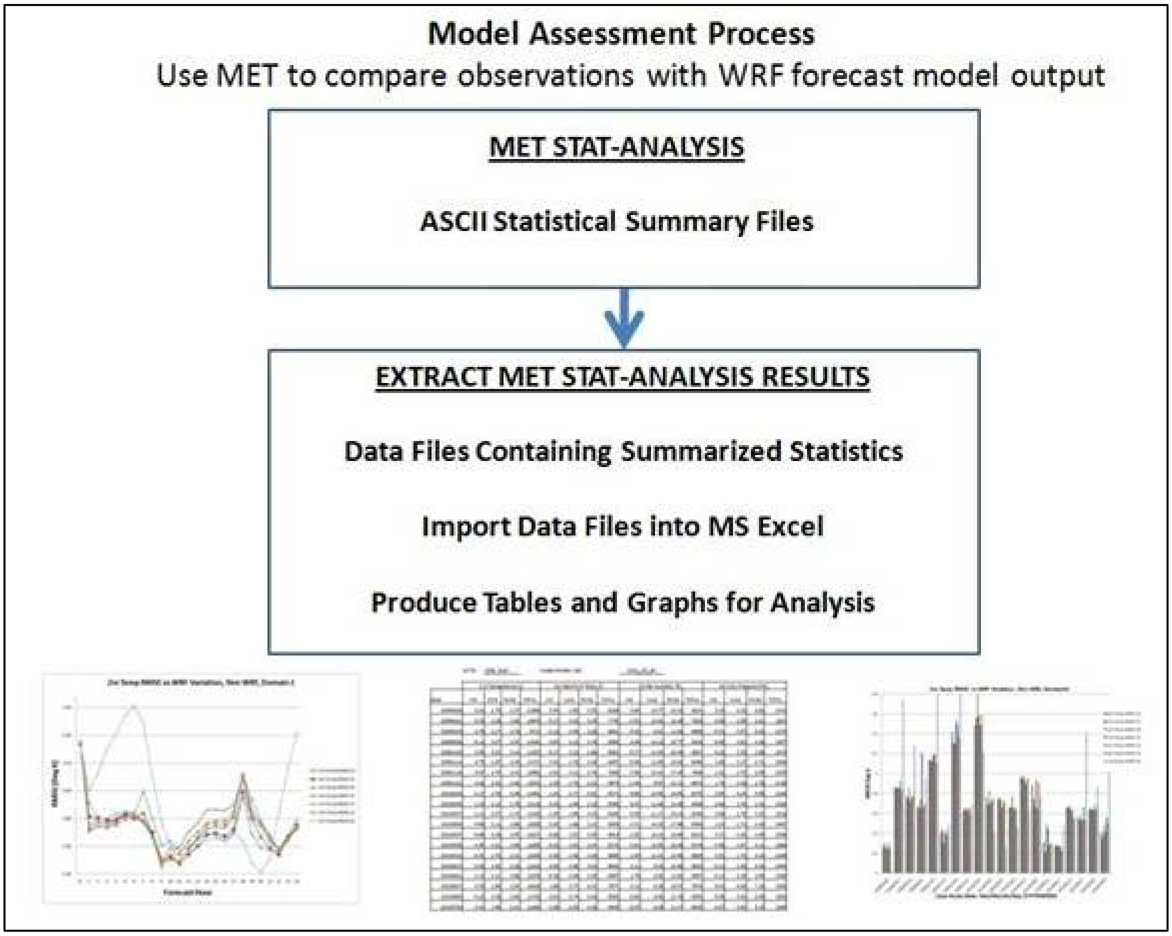

Figure 3. Statistical summary data is extracted and imported into MS Excel spreadsheets for analysis.

For more examples of how the extracted data can be used to analyze the performance of the WRF when run at 3-km and 1-km horizontal resolution and with various WRF model parameterizations, the user is referred to a 2009 ARL Internal Report (Sauter et al., 2009) and/or a follow-on 2011 ARL Technical Report (Raby et al., 2011) which compare WRF forecasts to weather observations over Utah.

3. Computer Resources

The computer resources for the project, as shown in table 1, include local ARL/Battlefield Environment Division (BED) workstations located at ARL/Computational and Information Sciences Directorate (CISD)/BED, White Sands Missile Range, NM and ARL High Performance Computer (HPC) systems located at Aberdeen, MD.

Table 1. Computer resources.

Name	Location	System Configuration	Operating System
Carson	Room 106, Bldg. 1622	Dell Precision T7400 Minitower, 2XQuad Core, 2.66 GHz processors, 8 GB DDR2 RAM, 250 GB SATA Disk, 1.5 TB SATA Disk, 1.0 TB SATA Disk	Red Hat LINUX, 64 Bit
Kelvin	Room 117, Bldg. 1622	Dell Optiplex 745 Small form Factor, Dual Core, 2.40 GHz processors, 2 GB DDR2 RAM, 140 GB SATA Disk	Red Hat LINUX, 64 Bit
Stokes	Room 104, Bldg 1622	Dell Optiplex 745 Small form Factor, Dual Core, 2.40 GHz processors, 2 GB DDR2 RAM, 140 GB SATA Disk	Red Hat LINUX, 32 Bit
Harold	HPC facility, Aberdeen, MD	HPC	UNIX
MJM	HPC facility, Aberdeen, MD	HPC	UNIX

4. Scripts

Scripts have been written to use the MET Point-Stat tool, which calculates the error statistics derived from the forecast-observation differences. The scripts control the acquisition of the gridded forecast field from the WRF either by running the WRF model or by using previously-generated WRF output. Other scripts control the collection of point observations from the PrepBUFR and MADIS sources. The forecast and observational data are cropped for the domains of interest and converted into Gridded Binary Format (GRIB1) and Network Common Data Form (NetCDF) formats respectively and placed into the directories for access by MET Point-Stat. Once Point-Stat processing is complete, MET Stat-Analysis scripts are run to produce various types of summaries of statistical results. Finally, other scripts enable the user to extract Stat-Analysis results for display and analysis in MS Excel spreadsheets. The scripts are described below and placed in appendices A−H organized according to the type of script and in the functional order they are used in the model assessment process.

4.1 Top-Level Scripts

Top-level scripts control the overall running of the model assessment process. The basic functionality of the script is presented in the following tables without some of the computer syntax required for actual execution. These scripts are contained in appendix A.

4.1.1 "s" Script

Table 2 shows the basic functionality of "s" script, and table 3 displays the prompted choices.

Table 2. Basic functionality of "s" top-level script.

Script Name	s
Author	Brown/Raby
Date	09/01/2010
Location	Carson
Script Purpose	Acts as the interactive top-level start script to initiate the model assessment process.

Table 3. Prompted choices for “s” script.

Prompted Choice	Name of script or Command
“Run WRF Initialization”	WRF_Main
“Create Passner Directories”	Create_Passner_Directories
“Logging on to mjm”	From Carson: mjmLogin From Kelvin: “ssh Kelvin” (then use mjmLogin on Kelvin)
“Downloading PrepBUFR Data (metar, synoptic, and upper air)”	run_prepBUFR
“Downloading MADIS Current Data (mesonet data)”	run_MADIS
“Downloading MADIS Archived Data (mesonet data)”	run_MADIS_Archive
“Converting MADIS ASCII data to netcdf”	ascii2netcdf
“Running Point-Stat”	run_Point_Stat
“Edit Scripts”	“Enter name of script to edit” Command: vi response
“Quit”	Command: exit 0

4.1.2 “s1” Script

Table 4 shows the basic functionality of “s1” script, and table 5 displays the prompted choices.

Table 4. Basic functionality of “s1” top-level script.

Script Name	s1
Author	Brown/Raby
Date	06/18/2010
Location	MJM
Script Purpose	Interactive top-level start script to continue the model assessment process on the HPC (MJM).

Table 5. Prompted choices for “s1” script.

Prompted Choice	Name of script or Command
“Run WRF”	Start_WRF
“Post process WRF output”	WRF_Post_Process
“Download post-processed data to Carson”	post_carson
“Quit”	Command: exit 0

4.1.3 “s2” Script

Table 6 shows the basic functionality of “s2” script, and table 7 displays the prompted choices.

Table 6. Basic functionality of “s2” top-level script.

Script Name	s2
Author	Brown/J. Raby/Y. Raby
Date	06/21/2010
Location	MJM
Script Purpose	Interactive top-level start script to continue the model assessment process on the HPC (MJM).

Table 7. Prompted choices for “s2” script.

Prompted Choice	Name of script or Command
“Post WRF Control run output”	post_carson_control
“Post WRF P2 run output”	post_carson_P2
“Post WRF P8 run output”	post_carson_P8
“Post WRF T3 run output”	post_carson_T3
“Post WRF L4 run output”	post_carson_L4
“Post WRF L8 run output”	post_carson_L8
“Post WRF B2 run output”	post_carson_B2
“Quit”	Command: exit 0

4.2 Embedded Scripts

Embedded scripts, discussed in the following sections, execute the individual modules, which produce the WRF output, post-process and reformat it, then post it to Carson in the location required by MET Point-Stat. They also execute the acquisition, cropping, reformatting and posting of the observational data for access by MET Point-Stat. These scripts are contained in appendices B−H.

4.2.1 Run WRF Forecast (Carson, Kelvin, MJM)

The scripts below enable the user to setup and run the WRF model. These scripts are contained in appendix B.

- WRF_Main (Carson)
- mjmLogin (Carson, Kelvin)
- Start_WRF (MJM)
- run_wrf_jr_old (MJM)

4.2.2 Convert PrepBUFR Data (Carson)

Observations for Dugway Proving Ground (DUG) and Kennedy Space Center (KSC) from the PrepBUFR source are collected and converted to NetCDF format by the scripts listed below on Carson. The conversion process uses the MET PB2NC tool and is controlled by configuration files, which set variables to govern how the observations are selected and retained after quality control (QC) checking. Table 8 lists the current variable settings. For a more complete description of these variables, the user is referred to the MET V2.0 User's Guide (National Center for Atmospheric Research, 2009). The configuration files are listed with the scripts below and are contained in appendix C.

- run_prepBUFR
- pb2nc_DUGd01_06_all.sh_template
- pb2nc_DUGd01_06_all.sh
- PB2NCConfig_DUGd01_hr1
- PB2NCConfig_DUGd01_hr2
- PB2NCConfig_DUGd01_hr3
- pb2nc_DUGd02_06_all.sh_template
- pb2nc_DUGd02_06_all.sh
- PB2NCConfig_DUGd02_hr1
- PB2NCConfig_DUGd02_hr2
- PB2NCConfig_DUGd02_hr3
- pb2nc_KSCd01_06_all.sh_template
- pb2nc_KSCd01_06_all.sh
- PB2NCConfig_KSCd01_hr1

Go back to previous view

- PB2NCConfig_KSCd01_hr2
- PB2NCConfig_KSCd01_hr3
- pb2nc_KSCd02_06_all.sh_template
- pb2nc_KSCd02_06_all.sh
- PB2NCConfig_KSCd02_hr1
- PB2NCConfig_KSCd02_hr2
- PB2NCConfig_KSCd02_hr3

Table 8. PrepBUFR conversion configuration file variable settings.

Variable Name	Setting
message_type []	[“ADPSFC”, “ADPUPA”, “ANYAIR”]
station_id []	[] (blank)
beg_ds (varies with config file)	−4500 (for _hr1), −900 (for _hr2), 2700 (for _hr3)
end_ds (varies with config file)	−2700 (for _hr1), 900 (for _hr2), 4500 (for _hr3)
mask_grid	“” (none)
mask_poly	“LLLd0x.poly” where LLL is DUG or KSC and x denotes either domain 1 or domain 2.
beg_elev	−1000
end_elev	100000
pb_report_type []	[] (blank)
in_report_type []	[] (blank)
instrument_type []	[] (blank)
beg_level	1
end_level	255
obs_grib_code []	[“TMP”, “HGT”, “UGRD”, “VGRD”, “DPT”, “WIND”, “RH”, “PRMSL”]
quality_mark_thresh	2
event_stack_flag	1
level_category []	[] (blank)
tmp_dir	“/tmp”
version	“V2.0”

4.2.3 Download and Reformat MADIS Data (Carson)

The scripts below enable the user to download archived or current MADIS mesonet observations, crop them for either the DUG or the KSC domains, then convert them into hourly NetCDF files. These scripts are contained in appendix D.

- run_MADIS
- run_MADIS_Archive
- MADIS_crop_Template
- MADIS_crop
- MADIS_crop_Dug_Template
- MADIS_crop_Dug
- sfcdump_CapeC_1_d1_Template
- sfcdump_CapeC_1_d2_Template
- sfcdump_Dugway_1_d1_Template
- sfcdump_Dugway_1_d2_Template
- runMADIStoMET
- ascii2netcdf
- ascii2nc_KSCd01_06_all_template
- ascii2nc_KSCd01_06_all.sh
- ascii2nc_KSCd02_06_all_template
- ascii2nc_KSCd02_06_all.sh
- ascii2netcdf_Dug
- ascii2nc_DUGd01_06_all_template
- ascii2nc_DUGd01_06_all.sh
- ascii2nc_DUGd02_06_all_template
- ascii2nc_DUGd02_06_all.sh

4.2.4 WRF Post-Processing

The scripts below enable the user to post-process the WRF output into hourly GRIB1 files on MJM, and then download these files to Carson. They also create a directory structure on Carson to organize the output based on the case study date and WRF variation. These scripts are contained in appendix E.

- Create_Passner_Directories (Carson)
- WRF_Post_Process (MJM)
- run_wrfpost_frames_template (MJM)
- post_carson (MJM)
- post_carson_control (MJM)
- post_carson_p2 (MJM)
- post_carson_p8 (MJM)
- post_carson_T3 (MJM)
- post_carson_L4 (MJM)
- post_carson_L8 (MJM)
- post_carson_B2 (MJM)

4.2.5 MET Point-Stat (Carson)

The scripts below execute MET Point-Stat on the WRF forecast and point observation data. The user is prompted for specifics to produce the desired statistics for the various combinations of WRF model horizontal resolution (m1-1 km, m2-3 km), domain (o1-domain 1, o2-domain 2), and WRF model run parameters (blank-control, P2-Physics2, P8-Physics8, T3-3Second, L4-40Levels, L8-80Levels, B2-MYJ BL). Point-Stat uses a configuration file, which specifies other parameters that control how the statistics will be calculated and how the output will look. These configuration files are the PointStatConfig scripts listed below. See tables 9, 10 and 11 for listings of the current configuration variable settings. The configuration file scripts contain descriptions of each variable. The MET V2.0 User's Guide contains more detailed descriptions of configuration variables (National Center for Atmospheric Research, 2009). These scripts are contained in appendix F.

- run_Point_Stat
- run_PointStat_Passner.sh
- PointStatConfig_m1o1pb

- PointStatConfig_m1o2as
- PointStatConfig_m2o2as
- PointStatConfig_m1o1_P2
- PointStatConfig_m1o2_P2
- PointStatConfig_m2o2_P2
- PointStatConfig_m1o1_P8
- PointStatConfig_m1o2_P8
- PointStatConfig_m2o2_P8
- PointStatConfig_m1o1_T3
- PointStatConfig_m1o2_T3
- PointStatConfig_m2o2_T3
- PointStatConfig_m1o1_L4
- PointStatConfig_m1o2_L4
- PointStatConfig_m2o2_L4
- PointStatConfig_m1o1_L8
- PointStatConfig_m1o2_L8
- PointStatConfig_m2o2_L8
- PointStatConfig_m1o1_B2
- PointStatConfig_m1o2_B2
- PointStatConfig_m2o2_B2

Note: Appendix F contains only one of the above PointStatConfig files (PointStatConfig_m1o1pb) since the only difference between these files is between lines 467−468, where the output_ prefix variable is changed to reflect the domain, resolution and WRF variation in the output filenames. The output_ prefix variable names for all configuration files are shown in table 12.

Go back to previous view

Table 9. Point-Stat configuration file variable settings.

Variable Name	Setting
Model	WRF
beg_ds	−1200
end_ds	1200
fcst_field []	See table 10
obs_field []	[] (blank)
fcst_thresh []	See table 11
obs_thresh []	[] (blank)
fcst_wind_thresh []	[“NA”]
obs_wind_thresh []	[“ge1.0”]
message_type []	[“ADPUPA”, “AIRCAR”, “AIRCFT”, “ADPSFC”]
mask_grid []	[“FULL”]
mask_poly []	[] (blank)
mask_sid	“” (blank)
ci_alpha []	[0.05]
boot_interval	1
boot_rep_prop	1.0
n_boot_rep	0
boot_rng	mt19937
boot_seed	“” (blank)
interp_method []	[“DW_MEAN”]
interp_width []	[2]
interp_thresh	1.0
output_flag []	[2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2]
rank_corr_flag	1
grib_ptv	2
tmp_dir	“/tmp”
output_prefix	See table 12
Version	“V2.0”

Go back to previous view

Table 10. Point-Stat configuration file fcst_field variable settings.

Point-Stat Configuration File fcst_field Variable Settings			
[“TMP/P100-225”,	“TMP/P225-425”,	“TMP/P425-625”,	“TMP/P625-775”,
“TMP/P775-875”,	“TMP/P875-910”,	“TMP/P910-1010”,	“HGT/P100-225”,
“HGT/P225-425”,	“HGT/P425-625”,	“HGT/P625-775”,	“HGT/P775-875”,
“HGT/P875-910”,	“HGT/P910-1010”,	“UGRD/P100-225”,	“VGRD/P100-225”,
“UGRD/P225-425”,	“VGRD/P225-425”,	“UGRD/P425-625”,	“VGRD/P425-625”,
“UGRD/P625-775”,	“VGRD/P625-775”,	“UGRD/P775-875”,	“VGRD/P775-875”,
“UGRD/P875-910”,	“VGRD/P875-910”,	“UGRD/P910-1010”,	“VGRD/P910-1010”,
“DPT/P100-225”,	“DPT/P225-425”,	“DPT/P425-625”,	“DPT/P625-775”,
“DPT/P775-875”,	“DPT/P875-910”,	“DPT/P910-1010”,	“WIND/P100-225”,
“WIND/P225-425”,	“WIND/P425-625”,	“WIND/P625-775”,	“WIND/P775-875”,
“WIND/P875-910”,	“WIND/P910-1010”,	“RH/P100-225”,	“RH/P225-425”,
“RH/P425-625”,	“RH/P625-775”,	“RH/P775-875”,	“RH/P875-910”,
“RH/P910-1010”,	“TMP/Z2”,	“UGRD/Z10”,	“VGRD/Z10”,
“DPT/Z2”,	“WIND/Z10”,	“RH/Z2”,	“PRMSL/Z0”]

Table 11. Point-Stat configuration file fcst_thresh variable settings.

Point-Stat Configuration file fcst_thresh Variable Settings			
[“gt273”,	“gt273”,	“gt273”,	“gt273”,
“gt273”,	“gt273”,	“gt273”,	“gt14000”,
“gt8000”,	“gt4000”,	“gt2000,	“gt1000”,
“gt500”,	“gt500”,	“gt10”,	“gt5”,
“gt10”,	“gt5”,	“gt5”,	“gt5”,
“gt5”,	“gt5”,	“gt5”,	“gt5”,
“gt5”,	“gt5”,	“gt5”,	“gt5”,
“gt273”,	“gt273”,	“gt273”,	“gt273”,
“gt273”,	“gt273”,	“gt273”,	“gt20”,
“gt20”,	“gt10”,	“gt10”,	“gt10”,
“gt5”,	“gt5”,	“gt20”,	“gt20”,
“gt20”,	“gt30”,	“gt30”,	“gt30”,
“gt30”,	“gt273”,	“gt2”,	“gt2”,
“gt273”,	“gt5”,	“gt50”,	“gt1000”]

Table 12. Output_prefix variable names for Point-Stat configuration files.

Configuration File Name	output_prefix variable
PointStatConfig_m1o1pb	m1o1pb
PointStatConfig_m1o2as	m1o2as
PointStatConfig_m2o2as	m2o2as
PointStatConfig_m1o1_P2	m1o1_P2
PointStatConfig_m1o2_P2	m1o2_P2
PointStatConfig_m2o2_P2	m2o2_P2
PointStatConfig_m1o1_P8	m1o1_P8
PointStatConfig_m1o2_P8	m1o2_P8
PointStatConfig_m2o2_P8	m2o2_P8
PointStatConfig_m1o1_T3	m1o1_T3
PointStatConfig_m1o2_T3	m1o2_T3
PointStatConfig_m2o2_T3	m2o2_T3
PointStatConfig_m1o1_L4	m1o1_L4
PointStatConfig_m1o2_L4	m1o2_L4
PointStatConfig_m2o2_L4	m2o2_L4
PointStatConfig_m1o1_L8	m1o1_L8
PointStatConfig_m1o2_L8	m1o2_L8
PointStatConfig_m2o2_L8	m2o2_L8
aPointStatConfig_m1o1_B2	m1o1_B2
PointStatConfig_m1o2_B2	m1o2_B2
PointStatConfig_m2o2_B2	m2o2_B2

4.2.6 MET Stat-Analysis (Carson)

The scripts listed below execute MET Stat-Analysis on the Point-Stat output. The user is prompted for specifics to produce the desired statistics for a single day (Daily), by forecast hour for all dates (Hourly), or aggregated over all days and hours (Aggregated), for surface or upper air results for the various combinations of WRF model horizontal resolution (m1-1 km, m2-3 km), domain (o1-domain 1, o2-domain 2), and WRF model run parameters (blank-control, P2-Physics2, P8-Physics8, T3-3Second, L4-40Levels, L8-80Levels, B2-MYJ BL).

This implementation of Stat-Analysis does not use a configuration file for controlling how the statistics will be calculated and what the output will look like. Instead these variables are defined by settings, which are invoked by arguments specified in the Stat-Analysis run scripts. For all meteorological variables except wind direction, the arguments specified are as follows:

-job aggregate_stat –line_type MPR –out_line_type CNT

The default settings, which are invoked by the above arguments are described in the Stat-Analysis default configuration file and are also listed in a Stat-Analysis output file both of which are not presented in this guide. For reference, they are presented here in table 13.

Table 13. Stat-Analysis default configuration settings.

Variable Name	Setting
-out_alpha	0.05
-boot_interval	1
-boot_rep_prop	1.0
-n_boot_rep	1000
-boot_rng	mt19937
-boot_seed	(blank)
-tmp_dir	/tmp
-rank_corr_flag	1

For wind direction, the arguments specify the use of two methods for calculating the direction as follows:

For the “ROW_MEAN_WDIR” line, the mean forecast wind direction, mean observation wind direction, and the associated error are computed for each forecast-observation vector difference. Then the means are computed across each of these forecast wind directions, observation wind directions, and their errors.

For the “AGGR_WDIR” line, all the forecast vectors are summed. Then the observation vectors are summed. The vector difference between these two summed (Aggregated) vectors provides an aggregated difference from which, the mean forecast wind direction, observation wind direction, and the associated error are computed and written out (Raby et. al., 2011).

The MET V2.0 User’s Guide contains more detailed information on Stat-Analysis (National Center for Atmospheric Research, 2009).

The Stat-Analysis scripts listed below are contained in appendix G.

- run_Stat_Analysis

Daily Analysis

- run_sfc_template.sh
- run_ua_adpupa_template.sh

- run_ua_acft_template.sh
- run_ua_aircar_template.sh

Hourly

- run_sfc_template_hours.sh
- run_ua_template_hours.sh
- run_ua_acft_template_hours.sh
- run_ua_aircar_template_hours.sh

Aggregated

- run_sfc_template_all_hours.sh
- run_ua_template_all_hours.sh
- run_acft_template_all_hours.sh
- run_aircar_template_all_hours.sh

4.2.7 Extract Stat-Analysis Data (Carson)

The script below performs extractions of the statistical summary results from MET Stat-Analysis. The user is prompted for the type of summary desired (Daily, Hourly, Aggregated, Upper Air Data), WRF resolution/domain combination (m1o1, m1o2, m2o2), WRF model run parameters (control, P2, P8, T3, L4, L8, B2), statistics desired, single day or multiple days, standard hours or a specific hour. This script is contained in appendix H.

run_ExtractStatAnalysis

---

5. Model Assessment Procedures and Checklists

The execution of the scripts to produce model assessment results following the process described in section 2 taken in its entirety can be a daunting task. The five steps logically breakdown the overall process into sub-processes each of which accomplishes a particular task. The following procedures take each of the sub-processes in order and break each down into step-by-step instructions with explanations to enable the user to simply follow the procedures to produce results. The user can track progress in following these procedures by using the checklists provided at the end of this section.

5.1 Procedures

There are two sources of WRF forecast data. The primary source is Jeff Passner who runs the WRF with various model parameter settings over two different locations during specific types of weather conditions in order to characterize the performance of the WRF. The two locations are DUG and KSC. The other source is the user himself running the WRF model on the HPC. In this case, we run the WRF using the "Control" parameter setting over DUG only. The capability for the user to run the WRF over KSC has not been established at this time. Steps 1−6 describe how to run the WRF on the HPC (MJM). These steps can be skipped if you are collecting Passner WRF data, so in this case proceed to step 7.

1. To begin, run the Start script on Carson. This script is invoked by typing the letter **s** on the command line, then [enter]. This launches a top-level automated control script, which guides the user though the various steps required to collect the evaluation data.
2. The first step involves running the "WRF_Main" script on Carson. This script performs the following:
    a. Provides the user the opportunity to check on the availability of the North American Model (NAM) forecast data on the National Oceanographic and Atmospheric Agency (NOAA) Web Site.
    b. Prompts the user to enter the Start/Stop Dates in this format: yyyymmdd. These dates are tracked through all of the scripts as the variables: $Start_Date and $Stop_Date.
    c. Creates a subdirectory named "$Start_Date in the MET_WRFpostprd" directory. This directory is needed to deposit the post-processed data after the intended WRF run. This data is used by MET to do the required comparisons.
    d. Sets up the WRF run namelist file using the Domain Wizard.
    e. Runs the REAL.exe process, which sets up the initialization data (NAM, etc) for WRF.
3. The following is a step-by-step procedure showing how to launch the Start script, then interact with the "WRF_Main" script as it executes:
    a. Close all instances of FireFox you have running on your workstation at this time.
    b. Type the letter **s** on the command line (from "Scripts" directory), then [enter].
    c. The user is presented nine tasks to select from. Select "1 Run WRF Initialization".
    d. The system asks you if you want to check availability of the NAM data. Select **"y"** to verify that the data is there at the website. A Firefox window showing the NAM data fields appears. Look at the files in the folder for current year and month. Look for the NAM data files for the correct year, month, and day. Verify that the GRIB1 files

(.grb) for the 0600Z forecast base time for the hours 00,03,06,09,12,15,18,21,24 are available, then close the browser. If the data are not there, cancel the WRF evaluation case study data collection for this particular date.

e. The script proceeds and prompts you to enter the desired date ($Start_Date) and the desired date plus one day ($Stop_Date).

f. After typing in the dates, the script launches Firefox for you to download the NAM data, which was verified earlier. Download all nine files. Be sure to note the successful completion of the download, and then close Firefox and the download windows.

g. The script will automatically launch the WRF Domain Wizard. Click "OK" in the middle of the first window.

h. Select "Open a domain" then click "next".

i. Select the "Dugway_1" domain, and then click "next".

j. Another map will appear, but just click "next".

k. The system asks "Regenerate namelist.input?" click "no".

l. The "Namelist.input" window appears. Select the Text Editor tab.

m. In the text window, change the start/end day entries to the desired dates, then click "Next".

n. The "Run Preprocessors" window appears. Change the grib start/end dates to the desired dates, then click the "Select Files" button.

o. The "Grib File List" window appears. Check to see if all the NAM grib files are on the left side. If so, click "Add all" to pass the files to the right side, then "OK".

p. In the "Run Preprocessor" window, click on "geogrid" and allow this to complete. (**Note**: that the TCWest server must be up and running for this to work. If it is not running, you will get an error.)

q. When "geogrid" is complete (100%), then click on "ungrib" and run until complete.

r. When "ungrib" is complete, run "metgrid" and run until complete.

s. When "metgrid" is complete, click "next" to bring up the "Visualize NetCDF" window, then click "Exit". Expand the size of the UNIX window to see the activity of the remainder of the script. REAL.exe executes at the end of the script.

4. The following describes how to run the WRF on MJM starting from Carson:

a. Insert the CAC into the keyboard and launch the Start script by typing **s** at the prompt.

b. Select the number 3 choice, "Login to mjm". (**Important note**: From the bbrown user account on Carson, the bbrown user operating on Carson will be prompted for a pin to enter MJM directly. From the jraby user account on Carson, the jraby user operating on Kelvin cannot login to MJM because the keyboard from which MJM expects to read the jraby user CAC is physically only accessible to the bbrown user.)

c. jraby user will be transferred from Carson to Kelvin. When you have the command prompt for Kelvin, run "mjmLogin N" where "N" is the number (1−7) of the MJM frontend. **Note**: It is not necessary to use the "N" and the command will execute without it using the last frontend from the previous login.

d. Log into MJM with pin when prompted.

e. At the MJM prompt, type **s1** on the command line, then [enter].

f. The user is presented three choices to select from. The choice at this point is "1 Run WRF".

g. "Run WRF" starts the "Start_WRF" script, which will upload the initialization files and namelist file from Carson and then starts the "run_wrf_jr_old" script that starts the WRF run. This script also sets up the output directory so the WRF output (two files) gets posted on MJM in the "WRF3011/run" directory.

5. Type the alias **qsg** to display the status of the WRF run in the queue and later when it's running.

   a. Note the job number (such as 33908.o2) of the WRF run for future reference.

6. Log out of MJM. Run usually completes within 24 hours of commencement.

7. The following describes how to process the PrepBUFR and download and process MADIS observational data on Carson:

   a. Type the letter **s** on the command line, then [enter].

   b. The user is presented nine tasks to select from. The choice at this point is "4 Convert PrepBUFR data to netcdf format". This runs the "run_prepBUFR" script.

   c. The user is asked to select either DUG or KSC as the desired location.

   d. Check in the directory "/opt3b/PrepBUFR" to determine if the PrepBUFR directories for "$Start_Date" and "$Stop_Date" are available. A cron job automatically downloads the PrepBUFR data daily, and the data are usually available with few exceptions.

e. The user can then choose to continue with the process or abort if the data are not available for the required dates.

f. When the script asks if you want to proceed, answer with a "**p**" or a "**P**" to proceed, or an "**x**" or "**X**" to exit the process. The conversion to NetCDF files (pb2nc) process takes about 25 minutes to run for DUG and 55 minutes for KSC.

g. Upon completion, the PrepBUFR NetCDF files will be in a directory named "MET_obs/ncobs/$Start_Date on Carson". Domain 1 and domain 2 observations are located together in this directory with the distinction as to which domain they belong to being made in the filenames.

h. When the conversion completes, type the letter **s** on the command line (from "Scripts" directory), then [enter].

i. To download the MADIS data, select from two possible choices: "5 Download MADIS Current Data (mesonet data)" or "6 Download MADIS Archived data (archived mesonet data". Choose archived data if your start date is more than four days ago, otherwise, choose current data.

j. "5 Download MADIS Current Data" runs the "run_MADIS" script. "6 Download MADIS Archived data" runs the "run_MADIS_Archive" script. This download will take about 25 minutes to complete.

k. When the download is complete, change to the "Scripts" directory and type the letter **s** on the command line, then [enter].

l. Select "7 Convert MADIS ASCII data to netcdf".

m. This runs the "ascii2netcdf" script, which performs the conversion.

n. Upon completion, the NetCDF files will be in a directory named "MET_obs/ncobs/" on Carson. There are two subdirectories created, which separate the observations into those for domain 1 and those for domain 2. The subdirectory names are "$Start_Date_d1 and $Start_Date_d2".

o. Archive the contents of the "ncobs" directory after you confirm the data is good.

    (1) There are two data backup discs on Carson.

        (a) Archive locations:

            (i) **/opt4b/DataBackup/jraby/** to the appropriate folder(s) as needed to archive the desired folder.

            (ii) **/opt2b/DataBackup/jraby/** to the appropriate folder(s) as needed to archive the desired folder.

(b) Copy the “ncobs” folder from “jraby” home directory to the “opt2b” archive folder.

(c) Go to **/opt4b/DataBackup** and execute the rsync command to update (copy) the directory tree on the opt4b backup disc with the data on the opt2b backup disc on Carson as follows:
rsync -av /opt2b/DataBackup/jraby/ jraby

(2) On the archive directory on HPC (Harold):

(a) Archive location:

(i) **archive/armyc/jraby**

(b) Go to **/archive/armyc** and execute the rsync command to update the directory tree on Harold with the data on the opt2b backup disc on Carson as follows:

rsync -av --rsh=ssh carson.arl.army.mil:/opt2b/DataBackup/jraby/ jraby

8. The following describes how to do the post processing of the WRF output on MJM after the WRF run is complete. **Note:** If you want to post-process Passner WRF runs, you must first copy the files from Passner’s account into your account in the “WRF3011/run” directory. Passner’s runs have filenames, which contain extra characters to indicate the WRF parameter setting. These characters must be removed by renaming the file to the standard names, which for the example start_date of 20090326 are as follows: wrfout_d01_2009-03-26_06:00:00 and wrfout_d02_2009-03-26_06:00:00

   a. Verify that the WRF run completed successfully or that the Passner WRF output is ready for post-processing by checking the “WRF3011/run” directory on MJM for the presence of two WRF output files for appropriate start date.

   b. On MJM, from your home directory, launch the Start script by typing **s1** at the prompt.

   c. Select the number 2 task, “Post process WRF output”.

   d. This will run the “WRF_Post_Process” and the “run_wrfpost_frames_template” scripts.

   e. The first script will prompt you for the start date of the run (yyyymmdd) to be entered on the keyboard and sets up directories for storing the results.

   f. After the start date is entered, the second script runs for about 30 minutes and produces the standard hourly WRF output files for domains 1 and 2 (50 files) from the native WRF output.

g. The second script copies the 50 output files from the "WRF3011/run" directory into the date directory for the WRF run ("WRFOUT/named date directory/postprd").

h. When the second script finishes, run the Start script, "s1", number 3 task on MJM, which transfers the post-processed output data from MJM to Carson (into "MET_WRFpostprd/$Start_Date" directory). This runs the script "post_carson" and takes about 10 minutes to complete.

Important: If you are post-processing Passner WRF variation runs, you must be sure to create named directories corresponding with the particular WRF variations on Carson prior to transferring the post-processed output from MJM. This is accomplished by running "**s**" on Carson and selecting option 2, "Create Passner Directories". This will make subdirectories in "MET_WRFpostprd/" for each start date/variation as follows:

(1) yyyymmdd–Control

(2) yyyymmdd_P2–Physics2

(3) yyyymmdd_P8−Physics8

(4) yyyymmdd_T3–3Second

(5) yyyymmdd_L4–40Levels

(6) yyyymmdd_L8–80Levels

(7) yyyymmdd_B2–MYJ BL

To transfer Passner WRF runs to the appropriate directory on Carson, run the Start script "s2" on MJM and select the option for posting the particular WRF variation data you want to transfer. Confirm that the 50 files are in the appropriate directory on Carson, then delete the 50 files from "WRFOUT/named date directory/postprd".

i. Exit from MJM.

j. Archive the "MET_WRFpostprd" directory or subdirectories when the results are final.

(1) There are two data backup discs on Carson.

(a) Archive locations:

(i) **/opt4b/DataBackup/jraby/** to the appropriate folder(s) as needed to archive the desired folder.

(ii) **/opt2b/DataBackup/jraby/** to the appropriate folder(s) as needed to archive the desired folder.

(b) Copy the "MET_WRFpostprd" folder from "jraby" home directory to the "opt2b" archive folder.

(c) Go to **/opt4b/DataBackup** and execute the rsync command to update (copy) the directory tree on the opt4b backup disc with the data on the opt2b backup disc on Carson as follows:
rsync -av /opt2b/DataBackup/jraby/ jraby

(2) On the archive directory on HPC (Harold):

(a) Archive location:

(i) **/archive/armyc/jraby**

(b) Go to **/archive/armyc** and execute the rsync command to update the directory tree on Harold with the data on the opt2b backup disc on Carson as follows:

rsync -av --rsh=ssh carson.arl.army.mil:/opt2b/DataBackup/jraby/ jraby

9. The following describes the procedure to run the MET Point-Stat tool on Carson to produce statistics on how the WRF forecast compares with the point observations.

Note: Prior to taking the steps below, be sure to check the names of the directories from which the observations and WRF forecasts will be read as dictated by the way the current scripts have been written.

For the observations, the directory names are "MET_obs/ncobs/$Start_Date" for PrepBUFR and

"MET_obs/ncobs/$Start_Date_d1 and MET_obs/ncobs/$Start_Date_d2" for MADIS

For the forecasts, the directory names are:

"MET_WRFpostprd/$Start_Date" for the control variation and "$Start_Date_XX" for the other WRF variations where XX is the variation P2, P8, T3, L4, L8, and B2.

As of the date of publication of these procedures, the data contained in the directories described above contains data for the KSC location for which Point-Stat has NOT been run. Therefore, when Point-Stat is run, the statistics produced will be for the KSC data. There are similarly-named directories on Carson, which contain archived observations and forecasts for DUG for which Point-Stat and Stat-Analysis results have already been produced. These directories are named as follows:

"Observations: MET_obs/ncobs_DUG"

"Forecasts: MET_WRFpostprd_DUG"

It is not anticipated that the data contained in these archive directories will need to be rerun using Point-Stat, but if that were the case, the user would need to rename the directories, which presently contain the KSC data to append "KSC" to the directory name and remove the "DUG" designation from the archive directory names so that the Point-Stat scripts will read the data for DUG.

a. On Carson, launch the Start script by typing **s** at the prompt.

b. Select the number 8 choice, "Run Point-Stat".

c. This will run the "Run_Point_Stat" script. This takes about seven minutes to complete.

d. The script will prompt you for the start date of the post-processed WRF data.

e. The script will prompt you for the WRF variation (CO, P2, P8, T3, L4, L8, B2).

f. The script will prompt you for the model resolution/domain combination (m1o1, m1o2, m2o2).

g. The script then sets up the date-specific directory where the Point-Stat output files will be placed. This directory is a subdirectory of the "MET_PointStat" directory in your home directory. The path to the output files is: **MET_PointStat/ results_(resolution/domain)_(variation) /YYYYmmdd** (date-specific directory). **Note:** The control variation results will be in a directory, which does not have the (variation) appended to the directory name. The output files contain evaluation statistics for each WRF forecast hour of the 25 produced.

h. Point-Stat log files documenting run activity, warnings and errors are posted in **MET_PointStat/logs**.

   Note: There is a similarly-named "MET_PointStat" directory, which has "DUG" appended to the name that serves as an archive directory for the Point-Stat results already produced. This directory will not be written to by following the instructions above. As of the publication date of this User's Guide, the Point-Stat output will be written to the "MET_PointStat" directory and will contain results for KSC.

10. The following describes the procedures for performing QC checks of the statistical data from the Point-Stat output files. The file of interest contains the character string, "cnt.txt", at the end of the filename. This file contains the Mean Error (ME) or Bias, the Mean Absolute Error (MAE), Root Mean Square Error (RMSE) statistics for 2-m surface temperature (TMP Z2), 2-m dew point temperature (DPT Z2), 2-m relative humidity (RH Z2), 0-m pressure (PRMSL Z0), 10-m wind U-component (UGRD Z10), 10-m wind V-component (VGRD Z10), 10-m wind speed (WIND Z10), and the total number of

matched pairs (TOTAL) which were used to generate the above statistics. This file also contains numerous other statistics.

a. QC the Point-Stat output by opening some of the cnt.txt files.

b. Examine the TOTAL, ME, MAE and RMSE stats to detect unreasonable results produced by an error of some type.

c. Examine the log files to detect "WARNING" or "ERROR" messages.

11. Archive the Point-Stat output files when you confirm the results are final.

a. There are two data backup discs on Carson.

(1) Archive locations:

(a) **/opt4b/DataBackup/jraby/** to the appropriate folder(s) as needed to archive the desired folder.

(b) **/opt2b/DataBackup/jraby/** to the appropriate folder(s) as needed to archive the desired folder.

(2) Copy the "MET_PointStat" folder from "jraby" home directory to the "opt2b" archive folder.

(3) Go to **/opt4b/DataBackup** and execute the rsync command to update (copy) the directory tree on the opt4b backup disc with the data on the opt2b backup disc on Carson as follows:
rsync -av /opt2b/DataBackup/jraby/ jraby

b. On the archive directory on HPC (Harold):

(1) Archive location:

(a) **/archive/armyc/jraby**

(2) Go to **/archive/armyc** and execute the rsync command to update the directory tree on Harold with the data on the opt2b backup disc on Carson as follows:
rsync -av --rsh=ssh carson.arl.army.mil:/opt2b/DataBackup/jraby/ jraby

12. The following describes the procedures for aggregating the results of numerous WRF runs with Point-Stat results over many case study days. This procedure involves the use of the MET Stat-Analysis tool.

13. Stat-Analysis looks for the .stat files located in the Point-Stat output files. These output files are located in: "MET_PointStat/ results_(resolution/domain)_(variation) /YYYYmmdd" (date-specific directory).

Go back to previous view

a. **Note:** Prior to running Stat-Analysis, be sure to check the names of the directories from which the Point-Stat output will be read as dictated by the way the current scripts have been written. As of the date of publication, the above-named directories contain data from the KSC domains. There are similarly-named Point-Stat output directories, which contain archived data for DUG. These have "DUG" appended to the directory name as follows:

"MET_pointStat_DUG/ results_(resolution/domain)_(variation) /YYYYmmdd" (date-specific directory)

14. Stat-Analysis can produce various types of statistical output based on user-defined aggregation criteria. The following are all the possible types of aggregations of Point-Stat output:

a. Surface and/or upper air results for one day.

b. Surface and/or upper air results over multiple dates:

(1) Option 1–Hourly output over all days

(2) Option 2–Output aggregated over all days and all hours

15. To run Stat-Analysis, type **run_Stat_Analysis** from anywhere on Carson. The user will be prompted as needed to produce the desired output. Instructions specific to the types of aggregated output are as follows:

a. Surface and/or upper air results for one day (Daily Analysis):

(1) Select option 1 for one date.

(2) Enter the desired date of the completed WRF run as yyyymmdd.

(3) Enter the desired WRF variation from the list of possible choices.

(4) Enter the desired resolution/domain from the list of possible choices (m1o1, m1o2, or m2o2).

(5) The output will be located in **MET_StatAnalysis/Summary_byDay/$Start_Date**

b. Surface and/or upper air results over multiple dates:

(1) Select option 2–Aggregate over many dates.

(2) Enter the desired WRF variation from the list of possible choices.

(3) Enter the desired resolution/domain from the list of possible choices (m1o1, m1o2, or m2o2).

(4) Select from the following two options for output:

(a) Option 1–Hourly output over all days (Hourly):

(i) Output will be in "MET_StatAnalysis/Summary_byHour/" in a subdirectory, which is named according to the model resolution/domain combination_WRF variation designation. Ex. m1o1_CO_sfc. Under this subdirectory, there are other subdirectories, which are named for the appropriate forecast hour.

(b) Option 2–All days, all hours accumulated (Aggregated)"

(i) Output will be in "MET_StatAnalysis/Summary_byHour/" in a subdirectory, which is named according to the model resolution/domain combination_WRF variation designation. For example "m1o1_CO_sfc". Under this subdirectory there is another subdirectory which is named "allhrs" that contains the aggregated result files.

c. QC the Stat-Analysis output by spot-checking the output files as follows:

(1) QC the Stat-Analysis output by opening some of the .txt files.

(2) Examine the TOTAL, ME, MAE and RMSE stats to detect unreasonable results produced by an error of some type.

(3) Examine the log files to detect "WARNING" or "ERROR" messages.

d. Archive the Stat-Analysis output files when you are sure the results are final.

(1) There are two data backup discs on Carson.

(a) Archive locations:

(i) **/opt4b/DataBackup/jraby/** to the appropriate folder(s) as needed to archive the desired folder.

(ii) **/opt2b/DataBackup/jraby/** to the appropriate folder(s) as needed to archive the desired folder.

(b) Copy the "MET_StatAnalysis" folder from "jraby" home directory to the "opt2b" archive folder.

(c) Go to **/opt4b/DataBackup** and execute the rsync command to update (copy) the directory tree on the opt4b backup disc with the data on the opt2b backup disc on Carson as follows:
rsync -av /opt2b/DataBackup/jraby/ jraby

(2) On the archive directory on HPC (Harold):

(a) Archive location:

(i) **/archive/armyc/jraby**

(b) Go to **/archive/armyc** and execute the rsync command to update the directory tree on Harold with the data on the opt2b backup disc on Carson as follows:
rsync -av --rsh=ssh carson.arl.army.mil:/opt2b/DataBackup/jraby/ jraby

16. The Stat-Analysis extraction script takes MET Stat-Analysis output files and selectively extracts the statistical data based on user input.

a. The Stat-Analysis extraction script looks for the .txt files located in the Stat-Analysis output directory. These output files are located in: MET_StatAnalysis/ in subdirectories "Summary_byDay" and "Summary_byHour" in subdirectories named for the model resolution/domain/WRF variation and finally in subdirectories for the "$Start-Date (yyyymmdd)". As of the publication date, there are only test data for KSC in the above directories, so following the steps below will extract KSC test data. These test data will be replaced by KSC case study data for 20 case study days within the next few months. There is a similarly-named directory for DUG Stat-Analysis archived results called "MET_StatAnalysis_DUG".

b. The Stat-Analysis extraction script places the results in a folder called "Results". There is a similarly named folder called "Results_DUG", which contains the archived DUG-extracted data. At publication time, no MET_StatAnalysis data for KSC has been extracted, so there is no "Results" folder. This folder, created by the extraction script, will be populated in the coming months when the KSC case study data is processed.

17. To extract Stat-Analysis results for the above output, you must decide which type of report you want to produce. The options, described in steps 15a and 15b, are as follows:

a. Surface results for one day (see step 15a).

(1) On Carson, type **run_ExtractStatAnalysis** from anywhere.

(2) Select "(3) Daily Surface data for a Model and WRF Variation".

(3) Enter the desired resolution/domain from the list of possible choices (m1o1, m1o2, or m2o2).

(4) Enter the desired WRF variation from the list of possible choices.

(5) Select from the three choices for output statistics:

(a) ME, MAE, RMSE and TOTAL

(b) ME, MAE, RMSE, TOTAL with confidence intervals (CI)

(c) Other statistics (pick from list of 71 statistics)

Note: For a list that briefly describes all the statistics refer to table 14. For a complete description of all the statistics, the user is referred to the MET Version 2.0 User's Guide (National Center for Atmospheric Research, 2009).

(6) Data files (.DAT) containing the ME, MAE and RMSE error statistics and the total number of forecast minus observation pairs (TOTAL) for all surface met variables for all dates for which Stat-Analysis was run to produce surface results for one day are located in **results/days/sfc** (see step 15a). The results for each day are placed in one row of output. The statistical results are located in columns with headers describing the particular statistic. When the files are opened by MS Excel, they can be read and further processed as desired.

b. Surface results over multiple dates−hourly output (see step 15b-1).

(1) On Carson, type **run_ExtractStatAnalysis**.

(2) Select option (1)–surface hourly data.

(3) Enter the desired resolution/domain from the list of possible choices (m1o1, m1o2, or m2o2).

(4) Enter the desired WRF variation from the list of possible choices.

(5) Select from the three choices for output statistics:

(a) ME, MAE, RMSE and TOTAL

(b) ME, MAE, RMSE, TOTAL with CI

(c) Other statistics (pick from list of 71 statistics listed in table 14)

(6) Data files (.DAT) containing the desired error statistics for all surface met variables over all dates for which Stat-Analysis was run to produce surface results for each forecast hour (00−24) are located in **results/hours/hourly** (see step 15b-1). The results for each hour are placed in one row of output. The statistical results are located in columns with headers describing the particular statistic. When the files are opened by MS Excel, they can be read and further processed as desired.

c. Surface results over multiple dates–All days, all hours accumulated output (see step 15b-2).

(1) On Carson, type **run_ExtractStatAnalysis**.

(2) Select option 2–surface data over all days and hours.

(3) Enter the desired resolution/domain from the list of possible choices (m1o1, m1o2, or m2o2).

(4) Select from the three choices for output:

(a) ME, MAE, RMSE and TOTAL

(b) ME, MAE, RMSE, TOTAL with CI

(c) Other statistics (pick from list of 71 statistics listed in table 14)

(5) Data files (.DAT) containing the desired error statistics for all surface met variables over all dates for which Stat-Analysis was run to produce surface results over all forecast hours (00−24) for each WRF variation are located in **results/hours/allhrs** (see step 15b-2). The results for each WRF variation are placed in one row of output. The statistical results are located in columns with headers describing the particular statistic. When the files are opened by MS Excel, they can be read and further processed as desired.

d. Upper air ADPUPA (RAOB) data for hour 00Z, hour 12Z, or both hours for all days (see steps 15a or 15b).

(1) On Carson, type **run_ExtractStatAnalysis**.

(2) Select option 4–Upper air data for hour 00Z, hour 12Z, a user-specified hour, or all hours, or daily?

(3) Enter the desired resolution/domain from the list of possible choices (m1o1, m1o2, or m2o2).

(4) Enter the desired WRF variation from the list of possible choices.

(5) Select the output option desired from the choices below:

(a) 12Z/HR 6 (Evaluates the 6-hour WRF forecast valid at 12Z)

(b) 00Z/HR 18 (Evaluates the 18-hour WRF forecast valid at 00Z)

(c) User-specified hour

(d) All (12Z, 00Z) hours aggregated

(e) Daily: single day

(6) Select from the three choices for output:

(a) ME, MAE, RMSE and TOTAL

(b) ME, MAE, RMSE, TOTAL with CI

(c) Other statistics (pick from list of 71 statistics from table 14)

(7) Data files (.DAT) containing the desired error statistics for all upper air met variables over all dates for which Stat-Analysis was run to produce upper air results for forecast hours 12Z, 00Z, or both for each WRF variation (see steps 15a or 15b). The results for each upper air level are placed in one row of output. The statistical results are located in columns with headers describing the particular statistic. When the files are opened by MS Excel, they can be read and further processed as desired.

(8) DAT file location:

(a) For results aggregated over all days and all hours: **results/hours/ua/adpupa** or **aircft** or **aircar**.

(b) For results aggregated over all hours for a single day: **results/days/ua/adpupa** or **aircft** or **aircar**.

Important: When importing DAT files, be sure to select the "Fixed Width" option for the data type as opposed to "Delimited", which Excel sometimes sets as the default for these files. With the exception of the "TOTAL" forecast-observation pair count, format the cells of the spreadsheet, which will contain your statistics data to "Numeric" with two decimal places. The "General" (default) format works best for the TOTAL count and for the headers. For DAT files with CI statistics, it is helpful to insert additional column breaks to separate the numerous columns of data, which are repeated for each MET variable.

Go back to previous view

Table 14. The statistics are presented in the order with the numerical assignment used when they are presented in the user interface menu of run_ExtractStatAnalysis.

Statistic Name/Menu Option Number	Statistic Description
FBAR (2), FBAR_NCL (3), FBAR_NCU (4), FBAR_BCL (5), FBAR_BCU (6)	Forecast mean including normal and bootstrap upper and lower confidence limits.
FSTDEV (7), FSTDEV_NCL (8), FSTDEV_NCU (9), FSTDEV_BCL (10), FSTDEV_BCU (11)	Standard deviation of the forecasts including normal and bootstrap upper and lower confidence limits.
OBAR (12), OBAR_NCL (13), OBAR_NCU (14), OBAR_BCL (15), OBAR_BCU (16)	Observation mean including normal and bootstrap upper and lower confidence limits.
OSTDEV (17), OSTDEV_NCL (18), OSTDEV_NCU (19), OSTDEV_BCL (20), OSTDEV_BCU (21)	Standard deviation of the observations including normal and bootstrap upper and lower confidence limits.
PR_CORR (22), PR_CORR_NCL (23), PR_CORR_NCU (24), PR_CORR_BCL (25), PR_CORR_BCU (26)	Pearson correlation coefficient including normal and bootstrap upper and lower confidence limits.
SP_CORR (27)	Spearman's rank correlation coefficient.
KT_CORR (28)	Kendall's tau statistic.
RANKS (29)	Number of ranks used in computing Kendall's tau statistic.
FRANK_TIES (30)	Number of tied forecast ranks used in computing Kendall's tau statistic.
ORANK_TIES (31)	Number of tied observation ranks used in computing Kendall's tau statistic.
ME (32), ME_NCL (33), ME_NCU (34), ME_BCL (35), ME_N=BCU (36)	Mean error (F−O) including normal and bootstrap upper and lower confidence limits.
ESTDEV (37), ESTDEV_NCL (38), ESTDEV_NCU (39), ESTDEV_BCL (40), ESTDEV_BCU (41)	Standard deviation of the error including normal and bootstrap upper and lower confidence limits.
MBIAS (42), MBIAS_BCL (43), MBIAS_BCU (44)	Multiplicative bias including bootstrap upper and lower confidence limits.
MAE (45), MAE_BCL (46), MAE_BCU (47)	Mean absolute error including bootstrap upper and lower confidence limits.
MSE (48), MSE_BCL (49), MSE_BCU (50)	Mean squared error including bootstrap upper and lower confidence limits.
BCMSE (51), BCMSE_BCL (52), BCMSE_BCU (53)	Bias-corrected mean squared error including bootstrap upper and lower confidence limits.
RMSE (54), RMSE_BCL (55), RMSE_BCU (56)	Root mean squared error including bootstrap upper and lower confidence limits.
E10 (57), E10_BCL (58), E10_BCU (59), E25 (60), E25_BCL (61), E25_BCU (62), E50 (63), E50_BCL (64), E50_BCU (65), E75 (66), E75_BCL (67), E75_BCU (68), E90 (69), E90_BCL (70), E90_BCU (71)	10^{th}, 25^{th}, 50^{th}, 75^{th}, and 90^{th} percentiles of the error including bootstrap upper and lower confidence limits.

e. Archive the DAT files when you are sure the data is final.

(1) There are two data backup discs on Carson:

(a) Archive locations:

(i) **/opt4b/DataBackup/jraby/** to the appropriate folder(s) as needed to archive the desired folder.

(ii) **/opt2b/DataBackup/jraby/** to the appropriate folder(s) as needed to archive the desired folder.

(b) Copy the results folder from "jraby" home directory to the "opt2b" archive folder.

(c) Go to /**opt4b/DataBackup** and execute the rsync command to update (copy) the directory tree on the opt4b backup disc with the data on the opt2b backup disc on Carson as follows:
rsync -av /opt2b/DataBackup/jraby/ jraby

(2) On the archive directory on HPC (Harold):

(a) Archive location:

(i) **/archive/armyc/jraby**

(b) Go to **/archive/armyc** and execute the rsync command to update the directory tree on Harold with the data on the opt2b backup disc on Carson as follows: **rsync -av --rsh=ssh carson.arl.army.mil:/opt2b/DataBackup/jraby/ jraby**

5.2 Checklists

The following checklist summarizes and tracks the steps required to produce and collect WRF evaluation data and perform MET evaluations. Print out hardcopies of this checklist, Collect WRF Evaluation Data–Run WRF Model, located in appendix I. **Note:** If you are not going to run the WRF and want to work with Passner WRF runs, do not use this checklist. A separate checklist for this task is provided in step 19.

18. Use this checklist for running the WRF:

a. Day 1−Run the Start Script (**s**), Task #1 on Carson to process the WRF initialization data. _________.

b. Day 1–For Kelvin, if a. is completed successfully, run the "**s**", Task #3 on Carson to prepare for and run the WRF on MJM.__________. For Carson, log onto MJM and proceed with c. below_________.

c. Day 1–On MJM, run the "**s1** ", Task #1 to start the WRF. Note the job number _______.

d. Day 1−Periodically check the status of the WRF run on MJM using "qsg" alias.____.

e. Day 1–Run the "**s**", Task #4 on Carson to convert the PrepBUFR data._________.

f. Day 1–Run the "**s**", Task #5 or #6 on Carson as needed for downloading MADIS current or archived data._________.

g. Day 1–Run the "**s**", Task #7 to convert the MADIS ASCII data files to netcdf format._______.

h. Day 2–Check the status of the WRF run on MJM. If complete, check the presence of the 2 WRF output files in WRF3011/run directory on MJM.________.

i. Day 2–If the 2 output files are present on MJM, run the "**s1**", Task #2 on MJM to post-process the WRF output.________.

j. Day 2–When the post-processing is complete, run the "**s1**", Task #3 on MJM to transfer the post-processed data to Carson._________.

k. Day 2−When the transfer is complete, exit from MJM and run the "**s**", Task #8 on Carson to run the Point-Stat application to produce evaluation statistics.______.

l. Day 2–When Point-Stat is complete, QC the Point-Stat results._______.

m. Day 2−Archive the Point-Stat result files on the "L" drive in the archive folder._______.

n. Day 2 or beyond–Run Stat-Analysis as needed to produce aggregated results and summaries of statistics for analysis. See separate checklists in step 20 below.

o. Day 2 or beyond–Extract Stat-Analysis results to prepare files suitable for importing into MS Excel and to produce tables and graphs for analysis and publication. See separate checklist in step 21 below.

The following checklist summarizes and tracks the steps required to collect Passner WRF evaluation data. Print out hardcopies of this checklist, Collect WRF Evaluation Data–Process Passner WRF Runs, located in appendix J.

19. Use this checklist for Passner WRF runs:

a. Day 1−Confirm that the PrepBUFR data and MADIS observational data have been collected on Carson for Passner's case study dates and have been converted to netcdf format._________.

Go back to previous view

b. Day 1–On MJM, copy Passner WRF output files (2) to your WRF3011/run directory.________.

c. Day 1–On MJM, run the "**s1**" script and select #2 to post-process Passner WRF output ________.

d. Day 1–When the post-processing is complete, run the "**s**" script, task #2 on Carson to create the appropriate directories for the post-processed WRF output. _______.

e. Day 1–On MJM, run "**s2**" to transfer the 50 WRF output files to Carson.______.

f. Day 1−On MJM, delete the 50 WRF files from WRFOUT/named date directory/postprd. _______.

g. Day 1–Exit from MJM and run the "**s**", Task #8 on Carson to run the Point-Stat application to produce evaluation statistics.______.

h. Day 1–hen Point-Stat is complete, QC the Point-Stat results._______.

i. Day 1–Archive the Point-Stat result files on the "L" drive in the archive folder._______.

j. Day 2 or beyond–Run Stat-Analysis as needed to produce aggregated results and summaries of statistics for analysis. See separate checklist in step 20.

k. Day 2 or beyond–Extract Stat-Analysis results to prepare files suitable for importing into MS Excel to produce tables and graphs for analysis and publication. See separate checklist in step 21.

The following is a checklist for use of Stat-Analysis to produce aggregations of statistical results for analysis and publication:

20. Use this checklist for Stat-Analysis:

a. For surface and/or upper air results for one day (Daily Analysis, see step 15a).

(1) "run_Stat_Analysis", **option #1**, for start_date, WRF variation and resolution/domain.

(2) Use the checklist in figure 4 to keep track of progress or print out hardcopies of this checklist, which is located in appendix K.

Start_Date_______________

Domain	CO	P2	P8	T3	L4	L8	B2
m1o1							
m1o2							
m2o2							

Figure 4. Example 1 of StatAnalysis checklist (single day).

(1) Results are at: **MET_StatAnalysis/Summary_byDay/$Start_Date**.

(2) QC the Stat-Analysis results.

b. For surface and/or upper air results over multiple dates—hourly output (Hourly, see step 15b).

(1) "run_Stat_Analysis", **option #2** (over many dates), WRF variation and resolution/domain.

(2) Select **option #1** for hourly output.

(3) Use the checklist in figure 5 to keep track of progress or print out hardcopies of this checklist, which is located in appendix L.

Each hour, All days (option 1)

Domain	CO	P2	P8	T3	L4	L8	B2
m1o1							
m1o2							
m2o2							

Figure 5. Example of StatAnalysisAggregated checklist (option 1).

(4) Results are at: MET_StatAnalysis/Summary_byHour/mxox_XX_xxx/hrxx (see step 15b-1 for an explanation).

(5) QC the Stat-Analysis results.

c. For surface and/or upper air results over multiple dates—all days, all hours (Aggregated, see step 15b output).

(1) "run_Stat_Analysis", **option #2** (over many dates), WRF variation and resolution/domain.

(2) Select **option #2** for all days, all hours output.

Go back to previous view

(3) Use the checklist in figure 6 to keep track of progress or print out hardcopies of this checklist, which is located in appendix L.

All hours, All days (option 2)

Domain	**CO**	**P2**	**P8**	**T3**	**L4**	**L8**	**B2**
m1o1							
m1o2							
m2o2							

Figure 6. Example of StatAnalysisAggregated checklist (option 2).

(4) Results are at: MET_StatAnalysis/Summary_byHour/mxox_XX_xxx/allhrs (see step 15b-2 for an explanation).

(5) QC the Stat-Analysis results.

Below is a checklist for extraction of Stat-Analysis results for ingest into a MS Excel spreadsheet for analysis and report generation:

21. Use the checklist below for Stat-Analysis results extraction:

a. For surface results for one day:

(1) Run run_ExtractStatAnalysis, **option #3** on Carson, for resolution/domain, WRF variation, **Choice #1** for standard stats (ME, MAE, RMSE, TOTAL), **Choice #2** for standard stats plus CI stats, **Choice #3** for a list of all stats from which to choose ______. (See list of available stats in table 14.)

(2) DAT file output location: results/days/sfc. **Note:** These files contain results for each day, for all case study days.

(3) Copy DAT files from Carson to PC for conversion into MS Excel files.______.

(4) Use the checklist in figure 7 to keep track of progress or print out hardcopies of this checklist, which is located in appendix K.

Start_Date_______________

Domain	**CO**	**P2**	**P8**	**T3**	**L4**	**L8**	**B2**
m1o1							
m1o2							
m2o2							

Figure 7. Example 2 of StatAnalysis checklist (single day).

b. For surface results over multiple dates–hourly output:

(1) Run run_ExtractStatAnalysis on Carson, **option #1** (hourly data), resolution/domain, WRF variation, **Choice #1** for standard stats (ME, MAE, RMSE, TOTAL),**Choice #2** for standard plus CI stats, **Choice #3** for a list of all stats from which to choose.______. (See list of available stats in table 14.)

(2) DAT file output location: results/hours/hourly

(3) Copy DAT files from Carson to PC for conversion into MS Excel files.______.

(4) Use the checklist in figure 8 to keep track of progress or print out hardcopies of this checklist, which is located in appendix M.

Domain	CO	P2	P8	T3	L4	L8	B2
m1o1							
m1o2							
m2o2							

Figure 8. Example 1 of StatAnalysisSFCHourlyExtraction checklist.

c. For surface results over multiple dates–all days, all hours accumulated (Aggregated) for each WRF variation output:

(1) Run run_ExtractStatAnalysis on Carson, **option #2** (all days, all hours data), resolution/domain, **Choice #1** for standard stats (ME, MAE, RMSE, TOTAL), **Choice #2** for standard plus CI stats, **Choice #3** for a list of stats from which to choose.______. (See list of available stats in table 14.)

(2) DAT file output location: results/hours/allhrs

(3) Copy DAT files from Carson to PC for conversion into MS Excel files.______.

(4) Use the checklist in figure 9 to keep track of progress or print out hardcopies of this checklist, which is located in appendix M.

Domain	CO	P2	P8	T3	L4	L8	B2
m1o1							
m1o2							
m2o2							

Figure 9. Example 2 of StatAnalysisSFCHourlyExtraction checklist.

d. For upper air ADPUPA (RAOB), AIRCFT (aircraft reports), or AIRCAR (ACARS observations) data–12Z, 00Z or both together, for all days or a single day:

(1) For ADPUPA data, run run_ExtractStatAnalysis on Carson, **option #4** enter ADPUPA, resolution/domain, WRF variation, choice of output as follows:

(a) 12Z/HR 6

(b) 00Z/HR18

(c) User-specified hour

(d) All (12Z,00Z) hours aggregated over all days

(e) User-specified day

(2) **Choice #1** for standard stats (ME, MAE, RMSE, TOTAL), **Choice #2** for standard plus CI stats, **Choice #3** for a list stats from which to choose.______. (See list of available stats in table 14.)

(3) DAT file location:

(a) For results aggregated over all days and all hours: Results/hours/ua/adpupa or aircft or aircar.

(b) For results aggregated over all hours for a single day: Results/days/ua/adpupa or aircft or aircar.

(4) Copy DAT files from Carson to PC for conversion into MS Excel files.______. **Important:** Use "Fixed Width" option in Excel to import upper air DAT files.

(5) For extracting RAOB data for a single day or all days use the checklist in figure 10 or print out hardcopies of this checklist, which is located in appendix N.

Domain	**CO**	**P2**	**P8**	**T3**	**L4**	**L8**	**B2**
m1o1	☐	☐	☐	☐	☐	☐	☐

Figure 10. Example of StatAnalysisSingleDayADPUPAExtraction checklist.

Go back to previous view

6. References

National Center for Atmospheric Research. *Model Evaluation Tools Version 2.0 User's Guide*; Developmental Testbed Center: Boulder, CO, 2009.

Raby et al. *Traditional Statistical Measures Comparing Weather Research and Forecast Model Output to Observations Centered Over Utah*; ARL-TR-5422; U.S. Army Research Laboratory: White Sands Missile Range, NM, 2011.

Sauter et al. *Traditional Statistical Measures Comparing Weather Research and Forecast Model Output to Observations Centered Over Utah*; ARL internal report; U.S. Army Research Laboratory: White Sands Missile Range, NM, 2009.

Appendix A. Top-Level Scripts

s

```
#Script Purpose: Top Level start script
#Author: Brown/Raby
#Date: 09/01/2010
#Script Name: s
#Script Location: carson home directory, jraby account
#Scripts Called: WRF_Main, Create_Passner_Directories, run_prepBUFR,
run_MADIS, run_MADIS_Archive, ascii2netcdf, run_Point_Stat
clear
echo "
"
echo "                 MODEL ASSESSMENT"
echo "
"
echo "Enter number of task"
echo "   1 Run WRF Initialization"
echo "   2 Create Passner Directories"
echo "   3 Login to mjm "
echo "   4 Download prepBUFR Data (metar, synoptic and upper air)"
echo " "
echo "   5 Download MADIS Current Data (mesonet data)"
echo "   6 Download MADIS Archived Data (current mesonet data)"
echo "   7 Convert MADIS ASCII data to netcdf"
echo " "
echo "   8 Run Point-Stat"
echo "   9 Edit Scripts "
echo "   10 Quit "
echo "  "
echo "  "
echo "  "
echo "  "
echo "  "
read response
case  $response in  # Start of case
(1)
echo "  "
echo "  "
echo "Running WRF_Main"
echo "  "
echo "  "
WRF_Main
;;

(2)
echo "  "
echo "  "
echo "Creating Passner WRF runs on Carson (control, P2, P8, T3, L4, L8,
B2)"
echo "  "
echo "  "
Create_Passner_Directories
;;
```

```
(3)
echo "  "
echo "  "
echo "Logging on to mjm"
echo "  "
echo "  "
mjmLogin
;;

(4)
echo "  "
echo "  "
echo "Downloading prepBUFR Data (metar, synoptic and upper air)"
echo "  "
echo "  "
run_prepBUFR
;;

(5)
echo "  "
echo "  "
echo "Downloading MADIS Current Data (mesonet data)"
echo "  "
echo "  "
run_MADIS
;;

(6)
echo "  "
echo "  "
echo "Downloading MADIS Archived Data (mesonet data)"
echo "  "
echo "  "
run_MADIS_Archive
;;

(7)
echo "  "
echo "  "
echo "Converting MADIS ASCII data to netcdf"
echo "  "
echo "  "
ascii2netcdf
;;

(8)
echo "  "
echo "  "
echo "Running Point-Stat"
echo "  "
echo " "
run_Point_Stat
;;
```

```
(9)
cd Scripts
clear
ls
echo "Enter the name of script to edit"
read response2
vi $response2
;;

(10) exit 0
;;
esac  # end of case ------------------------------------------
```

s1

```
#Script Purpose: Automate the Model Assessment Data Collection
#Author: Brown/Raby
#Date: 06/18/2010
Script Name: s1
#Script Location: mjm Scripts directory, jraby account
#Scripts Called: Start_WRF, WRF_Post_Process, post_carson
clear
echo "
"
echo "                 MODEL ASSESSMENT"
echo "
"
echo "Enter number of task"
echo "   1 Run WRF"
echo "   2 Post process WRF output"
echo "   3 Download post-processed data to carson"
echo "   4 Quit "
echo "  "
echo "  "
echo "  "
echo "  "
read response
case  $response in  # Start of case
(1)
echo "  "
echo "  "
echo "Running Start_WRF"
echo "  "
echo "  "
Start_WRF
;;
(2)
echo "  "
echo "  "
echo "Running WRF_Post_Process"
echo "  "
echo "  "
WRF_Post_Process
;;
(3)
echo " "
echo " "
post_carson
;;
(4) exit 0
;;
esac  # end of case -----------------------------------------
```

s2

```
#Script Purpose: Download post-processed output from Passner's WRF runs
#Author: Brown/J.Raby/Y.Raby
#Date: 06/21/2010
Script Name: s2
#Script Location: mjm Scripts directory, jraby account
#Scripts Called: post_carson_control, post_carson_P2, post_carson_P8,
post_carson_T3, post_carson_L4, post_carson_L8, post_carson_B2
clear
echo "
"
echo "                 MODEL ASSESSMENT"
echo "
"
echo "Enter number of task"
echo "   1 Post WRF Control run output"
echo "   2 Post WRF P2 run output"
echo "   3 Post WRF P8 run output"
echo "   4 Post WRF T3 run output"
echo "   5 Post WRF L4 run output"
echo "   6 Post WRF L8 run output"
echo "   7 Post WRF B2 run output"
echo "   8 Quit"
echo "  "
echo "  "
read response
case  $response in  # Start of case
(1)
echo "  "
echo "  "
echo "Posting WRF Control run output"
echo "  "
echo "  "
post_carson_control
;;
(2)
echo "  "
echo "  "
echo "Posting WRF P2 run output"
echo "  "
echo "  "
post_carson_P2
;;
(3)
echo " "
echo " "
echo "Posting WRF P8 output"
echo " "
echo " "
post_carson_P8
;;
(4)
echo " "
```

```
echo " "
echo "Posting WRF T3 output"
echo " "
echo " "
post_carson_T3
;;
(5)
echo " "
echo " "
echo "Posting WRF L4 output"
echo " "
echo " "
post_carson_L4
;;
(6)
echo " "
echo " "
echo "Posting WRF L8 output"
echo " "
echo " "
post_carson_L8
;;
(7)
echo " "
echo " "
echo "Posting WRF B2 output"
echo " "
echo " "
post_carson_B2
;;
(8) exit 0
;;
esac  # end of case -------------------------------------------
```

INTENTIONALLY LEFT BLANK.

Use bookmark pane to go back to main body

Appendix B. Embedded Scripts: Run WRF Forecast (Carson, Kelvin, MJM)

Use bookmark pane to go back to main body

WRF_Main

```
# Script Purpose: Automate the process of running the WRF Model
# Author Brown/Raby
# Date:  05/04/2010
# Script Name: WRF_Main
# Script Location: carson scripts directory, jraby account
# Calling Script: s
# Scripts Called:
# -----------------------------------------------


echo "Check for NAM data availability?"
read response1
echo " "
echo " "
case  $response1 in  # Start of Case ========================
(y|Y)  firefox
;;
(n|N)
# exit 0
;;
esac  # end of case

# Enter Dates ===================================================
# Enter Start date
clear
echo "Enter Start Date and Stop Date (YYYYmmdd) <space> (YYYYmmdd)"
read Start_Date Stop_Date

# Establish dir Start_Date in MET_WRFpostprd for the post processed WRF
data
cd ~/MET_WRFpostprd/
mkdir $Start_Date

#  Get NAM Data to Initialize WRF ===============================
cd ~/NAM
rm nam_218*
firefox

#  WRF Preprocessing ===============================================
cd ~/WRF/WRFDomains_3011/Dugway_1
rm met_em*  # Clean out old data files
rm FILE:*   # Clean out old data files

cd ~/WRF/WRFDomainWizard311
run_DomainWizard  # Start Domain Wizard

# Run Real ======================================================
cd ~/WRF/WRF3011/run
rm met_em*
cp ~/WRF/WRFDomains_3011/Dugway_1/met_em* .
cp ~/WRF/WRFDomains_3011/Dugway_1/namelist.input .
real.exe
```

mjmLogin

```
#===========================================================================
=====
author      ()    {
${ECHO}     "#    27-Oct-2010\t\t~rflaniga/Scripts/${script_name}"
${ECHO}     "#    R.Flanigan\t\t(575)678-2717\tRFlanigan@Q.com"
}
#===========================================================================
=====
options     ()    {
${ECHO}     "# NONE:"
author
${ECHO}     "#------------------------------------------------------------
---------"
${ECHO}     "# FORMAT:  ${script_name}   [1..8 Front End Number]"
${ECHO}     "#------------------------------------------------------------
---------"
${ECHO}     "#    Login in to MJM with CAC Card"
${ECHO}     "#------------------------------------------------------------
---------"
}
#===========================================================================
=====
decode_command_line_String   ()    {

for param       in      $1
do
#             ${ECHO} "PARAM=${param}"
      case  ${param}    in
      1|2|3|4|5|6|7|8)
            FrontEndNumber=`echo "${param}" | cut -d ":" -f 2 - `
            ;;
      OLD|Old|old)
            relm="OLD"
            ;;
      SSH|Ssh|ssh)
            Connection="SSH"
            ;;
      *)
            ${ECHO}     "\nERROR: Bad Front End Number \"${param}\""
            ;;
      esac

done
}
#===========================================================================
=====
MainLoop () {

ChangeKerberosPipe

if [ "${relm}" = "OLD" ]
then
```

```
      pkinit  ${USER}@ARL.HPC.MIL
else
      pkinit  ${USER}@HPCMP.HPC.MIL
fi
#---------------------------------------------------------------------------
----
if [ "${Connection}" = "SSH" ]
then
      ${ECHO}     "\tssh to MJM:${FrontEndNumber} ${USER}"
      ssh -Y mjm-l${FrontEndNumber}.arl.hpc.mil
else
      ${ECHO}     "\tkrlogin to MJM:${FrontEndNumber} ${USER}"
      krlogin -x mjm-l${FrontEndNumber}.arl.hpc.mil
fi
#---------------------------------------------------------------------------
----
#     kklist           # List the Keys!
}
#===========================================================================
=====
ChangeKerberosPipe     ()    {

if [ "${KRB5CCNAME_2}" != "" ]
then
      KRB5CCNAME="${KRB5CCNAME_2}"
      export     KRB5CCNAME
fi
}
#===========================================================================
=====
#===========================================================================
=====
#     MUST save $* to variable before any Function calls!
command_line_String="$*"
script_name="`echo $0 | awk -F/ '{printf("%s",$NF)}'`"
#---------------------------------------------------------------------------
----
ECHO="`setup_echo_command`"
Relm="NEW"
Connection="KRLOGIN"
FrontEndNumber="6"
#---------------------------------------------------------------------------
----
if [ "${command_line_String}" != "" ]
then
      decode_command_line_String   "${command_line_String}"
fi
MainLoop
#---------------------------------------------------------------------------
----
exit  0
#---------------------------------------------------------------------------
----
#
```

Start_WRF

```
# Script Purpose: Transfers data from carson and starts WRF run
# Author: Robert C. Brown
# Date: 01/29/2010
# Script Name: Start_WRF
# Script Location: mjm scripts directory, jraby account
# Calling Script: s
# Scripts Called: run_wrf_jr_old

# rm bb_job.out
# rm bb_job.err

cd ~/WRF3011/run

scp jraby@carson:'WRF/WRF3011/run/[nw][ar][mf][ebi]*' .

qsub<run_wrf_jr_old


ls [nw][ar][mf][ebi]*

# cd WRFOUT
# ../setsubs.sh
```

run_wrf_jr_old

```
#!/bin/csh
#==========================================================================
=====
#     BATCH_mjm_WRFrun_Template_PBS     9-Oct-2009
#     R.Flanigan  (575)678-2717
# Script Purpose: Starts WRF run and sets up the output directory
# Author: R. Flanigan
# Date: 01/29/2010 (this version)
# Script Name: run_wrf_jr_old
# Script Location: mjm WRF3011/run directory, jraby account
# Calling Script: Start_WRF
# Scripts Called:
#==========================================================================
=====
# Name of the job
#PBS -N WRF4_151_mjm
# Pass all the environmental variables to the parallel jobs
#PBS -V
# Queue Type debug, standard, challenge or background
#PBS -q standard
#PBS -l select=2:ncpus=4:mpiprocs=4
#PBS -l place=free
#PBS -l walltime=30:00:00
# Keep the standard out/error files
#PBS -k oe
# Don't restart job if it fails
#PBS -r n
# Project identifier
#PBS -A ARLAP14877100
#====================================================================
echo  ">>-->TIME: Batch Job Started at: `date`"
#====================================================================

#mkdir -p /usr/var/tmp/${LOGNAME}/${LSB_JOBID}
#cd /usr/var/tmp/$LOGNAME/$LSB_JOBID

#====================================================================
set  JOBID=`echo ${PBS_JOBID} | cut -f1 -d. `
set  TMPD=/usr/var/tmp/${LOGNAME}/${JOBID}
mkdir -p ${TMPD}
chmod 777 ${TMPD}

#
cp /usr/people/jraby/WRF3011/run/*.TBL  $TMPD
cp /usr/people/jraby/WRF3011/run/*_DATA $TMPD
cp /usr/people/jraby/WRF3011/run/*_DBL  $TMPD
cp /usr/people/jraby/WRF3011/run/grib*  $TMPD
cp /usr/people/jraby/WRF3011/run/*.tbl  $TMPD
#
cp /usr/people/jraby/WRF3011/main/wrf.exe     $TMPD
cp /usr/people/jraby/WRF3011/run/namelist.input     $TMPD
cp /usr/people/jraby/WRF3011/run/wrfbdy_d01   $TMPD
```

```
cp /usr/people/jraby/WRF3011/run/wrfinput_d*  $TMPD
#
date

echo "one"
cd $TMPD


#----------------------------------------------------------------------
echo  ">>-->TIME: WRF Run Started at: `date`"
#----------------------------------------------------------------------

openmpirun.pbs    ./wrf.exe

echo "two"
#
set st=$status
#======================================================================
echo    ">>-->TIME: Batch Job Ended at: `date`"
#======================================================================
#
cp $TMPD/wrfout* /usr/people/jraby/WRF3011/run/.
#
exit ${st}
#
```

INTENTIONALLY LEFT BLANK.

Appendix C. Embedded Scripts: Convert PrepBUFR Data (Carson)

run_prepBUFR

```
# Script Purpose: Automate the PrepBUFR to netcdf conversion
# Author Brown/Raby
# Date:  12/30/2010 (modified by J. Raby/Y. Raby to select location)
# Script Name: run_prepBUFR
# Script Location: ~jraby/Scripts
# Start Directory: ~jraby/Scripts

# ----------------------------------------------
echo "Which location?"
echo "Enter DUG or KSC"
read location



# Enter Dates ====================================================
# Enter Start date
clear
echo "Enter Start Date and Stop Date (YYYYmmdd) <space> (YYYYmmdd)"
read Start_Date Stop_Date

# Test for data Availability on Carson ==========================
cd  /opt3b/PrepBUFR
if [ -d $Start_Date ]
then
echo " "
echo  "The PrepBUFR directory $Start_Date is on Carson"
else
   echo " "
   echo  "The PrepBUFR directory $Start_Date is NOT on Carson"
fi

if [ -d $Stop_Date ]
then
   echo  "The PrepBUFR directory $Stop_Date is on Carson"
else
   echo  "The PrepBUFR directory $Stop_Date is NOT on Carson"
fi

# Proceed to PREPBUFR File conversion?
echo  " "
echo " "
echo "[P]roceed to the PrepBUFR to NetCDF coversion or E[x]it?"
read response2
case  $response2 in
(p|P)
echo  "Proceeding to the PrepBUFR to NetCDF coversion "
# cd /opt3a/users/bbrown
;;


(x|X)
echo "Exiting PepBUFR to netCDF data format conversion"
```

```
exit 0
;;
(*) echo "Please enter a selection shown in [ ] p or x"
;;
esac  # end of case -----------------------------------------

cd   ~/MET_obs/pbrun
sed
s/Start_Date/${Start_Date}/g<pb2nc_${location}d01_06_all.sh_template>pb2nc
_${location}d01_06_all.sh_temp
sed
s/Stop_Date/${Stop_Date}/g<pb2nc_${location}d01_06_all.sh_temp>pb2nc_${loc
ation}d01_06_all.sh

# Remove Temp Script
rm pb2nc_${location}d01_06_all.sh_temp  # Remove temp file

sed
s/Start_Date/${Start_Date}/g<pb2nc_${location}d02_06_all.sh_template>pb2nc
_${location}d02_06_all.sh_temp
sed
s/Stop_Date/${Stop_Date}/g<pb2nc_${location}d02_06_all.sh_temp>pb2nc_${loc
ation}d02_06_all.sh

# Remove Temp Script
rm pb2nc_${location}d02_06_all.sh_temp  # Remove temp file

# Run pb2nc  =====================================================
pb2nc_${location}d01_06_all.sh
pb2nc_${location}d02_06_all.sh
```

pb2nc_DUGd01_06_all.sh_template

```
#!/bin/sh
# This is the original script from Sauter
# Assigned a date of 082310 when incorporated into User’s Guide

echo
echo"***Running PB2NC on PrepBufr files***"
echo "***Files for use with WRF initialized at 06Z on Start_Date***"

mkdir ../ncobs/Start_Date

echo "hour 0"
pb2nc /PrepBUFR/Start_Date/ndas.t12z.prepbufr.tm06.nr
../ncobs/Start_Date/DUGd01_06_00_pb.nc ./PB2NCConfig_DUGd01_hr2 -v 2
echo "hour 1"
pb2nc /PrepBUFR/Start_Date/ndas.t12z.prepbufr.tm06.nr
../ncobs/Start_Date/DUGd01_06_01_pb.nc ./PB2NCConfig_DUGd01_hr3 -v 2
echo "hour 2"
pb2nc /PrepBUFR/Start_Date/ndas.t12z.prepbufr.tm03.nr
../ncobs/Start_Date/DUGd01_06_02_pb.nc ./PB2NCConfig_DUGd01_hr1 -v 2
echo "hour 3"
pb2nc /PrepBUFR/Start_Date/ndas.t12z.prepbufr.tm03.nr
../ncobs/Start_Date/DUGd01_06_03_pb.nc ./PB2NCConfig_DUGd01_hr2 -v 2
echo "hour 4"
pb2nc /PrepBUFR/Start_Date/ndas.t12z.prepbufr.tm03.nr
../ncobs/Start_Date/DUGd01_06_04_pb.nc ./PB2NCConfig_DUGd01_hr3 -v 2
echo "hour 5"
pb2nc /PrepBUFR/Start_Date/ndas.t18z.prepbufr.tm06.nr
../ncobs/Start_Date/DUGd01_06_05_pb.nc ./PB2NCConfig_DUGd01_hr1 -v 2
echo "hour 6"
pb2nc /PrepBUFR/Start_Date/ndas.t18z.prepbufr.tm06.nr
../ncobs/Start_Date/DUGd01_06_06_pb.nc ./PB2NCConfig_DUGd01_hr2 -v 2
echo "hour 7"
pb2nc /PrepBUFR/Start_Date/ndas.t18z.prepbufr.tm06.nr
../ncobs/Start_Date/DUGd01_06_07_pb.nc ./PB2NCConfig_DUGd01_hr3 -v 2
echo "hour 8"
pb2nc /PrepBUFR/Start_Date/ndas.t18z.prepbufr.tm03.nr
../ncobs/Start_Date/DUGd01_06_08_pb.nc ./PB2NCConfig_DUGd01_hr1 -v 2
echo "hour 9"
pb2nc /PrepBUFR/Start_Date/ndas.t18z.prepbufr.tm03.nr
../ncobs/Start_Date/DUGd01_06_09_pb.nc ./PB2NCConfig_DUGd01_hr2 -v 2
echo "hour 10"
pb2nc /PrepBUFR/Start_Date/ndas.t18z.prepbufr.tm03.nr
../ncobs/Start_Date/DUGd01_06_10_pb.nc ./PB2NCConfig_DUGd01_hr3 -v 2
echo "hour 11"
pb2nc /PrepBUFR/Stop_Date/ndas.t00z.prepbufr.tm06.nr
../ncobs/Start_Date/DUGd01_06_11_pb.nc ./PB2NCConfig_DUGd01_hr1 -v 2
echo "hour 12"
pb2nc /PrepBUFR/Stop_Date/ndas.t00z.prepbufr.tm06.nr
../ncobs/Start_Date/DUGd01_06_12_pb.nc ./PB2NCConfig_DUGd01_hr2 -v 2
echo "hour 13"
pb2nc /PrepBUFR/Stop_Date/ndas.t00z.prepbufr.tm06.nr
../ncobs/Start_Date/DUGd01_06_13_pb.nc ./PB2NCConfig_DUGd01_hr3 -v 2
```

```
echo "hour 14"
pb2nc /PrepBUFR/Stop_Date/ndas.t00z.prepbufr.tm03.nr
../ncobs/Start_Date/DUGd01_06_14_pb.nc ./PB2NCConfig_DUGd01_hr1 -v 2
echo "hour 15"
pb2nc /PrepBUFR/Stop_Date/ndas.t00z.prepbufr.tm03.nr
../ncobs/Start_Date/DUGd01_06_15_pb.nc ./PB2NCConfig_DUGd01_hr2 -v 2
echo "hour 16"
pb2nc /PrepBUFR/Stop_Date/ndas.t00z.prepbufr.tm03.nr
../ncobs/Start_Date/DUGd01_06_16_pb.nc ./PB2NCConfig_DUGd01_hr3 -v 2
echo "hour 17"
pb2nc /PrepBUFR/Stop_Date/ndas.t06z.prepbufr.tm06.nr
../ncobs/Start_Date/DUGd01_06_17_pb.nc ./PB2NCConfig_DUGd01_hr1 -v 2
echo "hour 18"
pb2nc /PrepBUFR/Stop_Date/ndas.t06z.prepbufr.tm06.nr
../ncobs/Start_Date/DUGd01_06_18_pb.nc ./PB2NCConfig_DUGd01_hr2 -v 2
echo "hour 19"
pb2nc /PrepBUFR/Stop_Date/ndas.t06z.prepbufr.tm06.nr
../ncobs/Start_Date/DUGd01_06_19_pb.nc ./PB2NCConfig_DUGd01_hr3 -v 2
echo "hour 20"
pb2nc /PrepBUFR/Stop_Date/ndas.t06z.prepbufr.tm03.nr
../ncobs/Start_Date/DUGd01_06_20_pb.nc ./PB2NCConfig_DUGd01_hr1 -v 2
echo "hour 21"
pb2nc /PrepBUFR/Stop_Date/ndas.t06z.prepbufr.tm03.nr
../ncobs/Start_Date/DUGd01_06_21_pb.nc ./PB2NCConfig_DUGd01_hr2 -v 2
echo "hour 22"
pb2nc /PrepBUFR/Stop_Date/ndas.t06z.prepbufr.tm03.nr
../ncobs/Start_Date/DUGd01_06_22_pb.nc ./PB2NCConfig_DUGd01_hr3 -v 2
echo "hour 23"
pb2nc /PrepBUFR/Stop_Date/ndas.t12z.prepbufr.tm06.nr
../ncobs/Start_Date/DUGd01_06_23_pb.nc ./PB2NCConfig_DUGd01_hr1 -v 2
echo "hour 24"
pb2nc /PrepBUFR/Stop_Date/ndas.t12z.prepbufr.tm06.nr
../ncobs/Start_Date/DUGd01_06_24_pb.nc ./PB2NCConfig_DUGd01_hr2 -v 2
```

pb2nc_DUGd01_06_all.sh

```
#!/bin/sh
# This is the original script from Sauter
# Assigned a date of 082310 when incorporated into User’s Guide

echo
echo"***Running PB2NC on PrepBufr files***"
echo "***Files for use with WRF initialized at 06Z on 20100114***"

mkdir ../ncobs/20100114

echo "hour 0"
pb2nc /PrepBUFR/20100114/ndas.t12z.prepbufr.tm06.nr
../ncobs/20100114/DUGd01_06_00_pb.nc ./PB2NCConfig_DUGd01_hr2 -v 2
echo "hour 1"
pb2nc /PrepBUFR/20100114/ndas.t12z.prepbufr.tm06.nr
../ncobs/20100114/DUGd01_06_01_pb.nc ./PB2NCConfig_DUGd01_hr3 -v 2
echo "hour 2"
pb2nc /PrepBUFR/20100114/ndas.t12z.prepbufr.tm03.nr
../ncobs/20100114/DUGd01_06_02_pb.nc ./PB2NCConfig_DUGd01_hr1 -v 2
echo "hour 3"
pb2nc /PrepBUFR/20100114/ndas.t12z.prepbufr.tm03.nr
../ncobs/20100114/DUGd01_06_03_pb.nc ./PB2NCConfig_DUGd01_hr2 -v 2
echo "hour 4"
pb2nc /PrepBUFR/20100114/ndas.t12z.prepbufr.tm03.nr
../ncobs/20100114/DUGd01_06_04_pb.nc ./PB2NCConfig_DUGd01_hr3 -v 2
echo "hour 5"
pb2nc /PrepBUFR/20100114/ndas.t18z.prepbufr.tm06.nr
../ncobs/20100114/DUGd01_06_05_pb.nc ./PB2NCConfig_DUGd01_hr1 -v 2
echo "hour 6"
pb2nc /PrepBUFR/20100114/ndas.t18z.prepbufr.tm06.nr
../ncobs/20100114/DUGd01_06_06_pb.nc ./PB2NCConfig_DUGd01_hr2 -v 2
echo "hour 7"
pb2nc /PrepBUFR/20100114/ndas.t18z.prepbufr.tm06.nr
../ncobs/20100114/DUGd01_06_07_pb.nc ./PB2NCConfig_DUGd01_hr3 -v 2
echo "hour 8"
pb2nc /PrepBUFR/20100114/ndas.t18z.prepbufr.tm03.nr
../ncobs/20100114/DUGd01_06_08_pb.nc ./PB2NCConfig_DUGd01_hr1 -v 2
echo "hour 9"
pb2nc /PrepBUFR/20100114/ndas.t18z.prepbufr.tm03.nr
../ncobs/20100114/DUGd01_06_09_pb.nc ./PB2NCConfig_DUGd01_hr2 -v 2
echo "hour 10"
pb2nc /PrepBUFR/20100114/ndas.t18z.prepbufr.tm03.nr
../ncobs/20100114/DUGd01_06_10_pb.nc ./PB2NCConfig_DUGd01_hr3 -v 2
echo "hour 11"
pb2nc /PrepBUFR/20100115/ndas.t00z.prepbufr.tm06.nr
../ncobs/20100114/DUGd01_06_11_pb.nc ./PB2NCConfig_DUGd01_hr1 -v 2
echo "hour 12"
pb2nc /PrepBUFR/20100115/ndas.t00z.prepbufr.tm06.nr
../ncobs/20100114/DUGd01_06_12_pb.nc ./PB2NCConfig_DUGd01_hr2 -v 2
echo "hour 13"
pb2nc /PrepBUFR/20100115/ndas.t00z.prepbufr.tm06.nr
../ncobs/20100114/DUGd01_06_13_pb.nc ./PB2NCConfig_DUGd01_hr3 -v 2
```

```
echo "hour 14"
pb2nc /PrepBUFR/20100115/ndas.t00z.prepbufr.tm03.nr
../ncobs/20100114/DUGd01_06_14_pb.nc ./PB2NCConfig_DUGd01_hr1 -v 2
echo "hour 15"
pb2nc /PrepBUFR/20100115/ndas.t00z.prepbufr.tm03.nr
../ncobs/20100114/DUGd01_06_15_pb.nc ./PB2NCConfig_DUGd01_hr2 -v 2
echo "hour 16"
pb2nc /PrepBUFR/20100115/ndas.t00z.prepbufr.tm03.nr
../ncobs/20100114/DUGd01_06_16_pb.nc ./PB2NCConfig_DUGd01_hr3 -v 2
echo "hour 17"
pb2nc /PrepBUFR/20100115/ndas.t06z.prepbufr.tm06.nr
../ncobs/20100114/DUGd01_06_17_pb.nc ./PB2NCConfig_DUGd01_hr1 -v 2
echo "hour 18"
pb2nc /PrepBUFR/20100115/ndas.t06z.prepbufr.tm06.nr
../ncobs/20100114/DUGd01_06_18_pb.nc ./PB2NCConfig_DUGd01_hr2 -v 2
echo "hour 19"
pb2nc /PrepBUFR/20100115/ndas.t06z.prepbufr.tm06.nr
../ncobs/20100114/DUGd01_06_19_pb.nc ./PB2NCConfig_DUGd01_hr3 -v 2
echo "hour 20"
pb2nc /PrepBUFR/20100115/ndas.t06z.prepbufr.tm03.nr
../ncobs/20100114/DUGd01_06_20_pb.nc ./PB2NCConfig_DUGd01_hr1 -v 2
echo "hour 21"
pb2nc /PrepBUFR/20100115/ndas.t06z.prepbufr.tm03.nr
../ncobs/20100114/DUGd01_06_21_pb.nc ./PB2NCConfig_DUGd01_hr2 -v 2
echo "hour 22"
pb2nc /PrepBUFR/20100115/ndas.t06z.prepbufr.tm03.nr
../ncobs/20100114/DUGd01_06_22_pb.nc ./PB2NCConfig_DUGd01_hr3 -v 2
echo "hour 23"
pb2nc /PrepBUFR/20100115/ndas.t12z.prepbufr.tm06.nr
../ncobs/20100114/DUGd01_06_23_pb.nc ./PB2NCConfig_DUGd01_hr1 -v 2
echo "hour 24"
pb2nc /PrepBUFR/20100115/ndas.t12z.prepbufr.tm06.nr
../ncobs/20100114/DUGd01_06_24_pb.nc ./PB2NCConfig_DUGd01_hr2 -v 2
```

PB2NCConfig_DUGd01_hr1

```
////////////////////////////////////////////////////////////////////////////
//////
//
// pb2nc configuration file for DUG domain 1, hour 1,
082410:~jraby/MET_obs/pbrun/PB2NCConfig_DUGd01_hr1
//
////////////////////////////////////////////////////////////////////////////
//////

//
// Stratify the observation data in the PrepBufr files in the following
// ways:
//  (1) by message type: supply a list of PrepBufr message types
//      to retain (i.e. AIRCFT)
//  (2) by station id: supply a list of observation stations to retain
//  (3) by valid time: supply starting and ending times in form
//      YYYY-MM-DD HH:MM:SS UTC
//  (4) by location: supply either an NCEP masking grid, a masking
//      lat/lon polygon or a file to a mask lat/lon polygon
//  (5) by elevation: supply min/max elevation values
//  (6) by report type (typ): supply a list of report types to retain
//  (7) by instrument type (itp): supply a list of instrument type to
//      retain
//  (8) by vertical level: supply min/max vertical levels
//  (9) by variable type: supply a list of variable types to retain
//      P, Q, T, Z, U, V
// (11) by quality mark: supply a quality mark threshold
// (12) Flag to retain values for all quality marks, or just the first
//      quality mark (highest)
// (13) by data level category: supply a list of category types to
//      retain.
//
//      0 - Surface level (mass reports only)
//      1 - Mandatory level (upper-air profile reports)
//      2 - Significant temperature level (upper-air profile reports)
//      2 - Significant temperature and winds-by-pressure level
//          (future combined mass and wind upper-air reports)
//      3 - Winds-by-pressure level (upper-air profile reports)
//      4 - Winds-by-height level (upper-air profile reports)
//      5 - Tropopause level (upper-air profile reports)
//      6 - Reports on a single level
//          (e.g., aircraft, satellite-wind, surface wind,
//           precipitable water retrievals, etc.)
//      7 - Auxiliary levels generated via interpolation from spanning
levels
//          (upper-air profile reports)
//

//
// Specify a comma-separated list of PrepBufr message type strings to
retain.
// An empty list indicates that all should be retained.
```

```
// List of valid message types:
//    ADPUPA AIRCAR AIRCFT ADPSFC ERS1DA GOESND GPSIPW
//    MSONET PROFLR QKSWND RASSDA SATEMP SATWND SFCBOG
//    SFCSHP SPSSMI SYNDAT VADWND
//    ANYAIR (= AIRCAR, AIRCFT)
//    ANYSFC (= ADPSFC, SFCSHP, ADPUPA, PROFLR)
//    ONLYSF (= ADPSFC, SFCSHP)
//
http://www.emc.ncep.noaa.gov/mmb/data_processing/prepbufr.doc/table_1.htm
//
// e.g. message_type[] = [ "ADPUPA", "AIRCAR" ];
//
message_type[] = [ "ADPSFC", "ADPUPA", "ANYAIR" ];

//
// Specify a comma-separated list of station ID strings to retain.
// An empty list indicates that all should be retained.
//
// e.g. station_id[] = [ "KDEN" ];
//
station_id[] = [];

//
// Beginning and ending time offset values in seconds for observations
// to retain.  The valid time window for retaining observations is
// defined in reference to the observation time.  So observations with
// a valid time falling in the window [obs_time+beg_ds, obs_time+end_ds]
// will be retained.
//
beg_ds = -4500;
end_ds = -2700;

//
// Specify the name of a single grid to be used in masking the data.
// An empty string indicates that no grid should be used.  The standard
// NCEP grids are named "GNNN" where NNN indicates the three digit grid
number.
//
// http://www.nco.ncep.noaa.gov/pmb/docs/on388/tableb.html
//
// e.g. mask_grid = "G212";
//
mask_grid = "";

//
// Specify a single lat/lon polygon file to be used in masking the data
over
// which to perform scoring.  An empty string indicates that no polygon
mask
// should be used.
//
// Latitude values are given in degrees north and longitude values are
// given in degrees east.  By default, the first and last points are
// connected.
```

```
//
// The lat/lon polygon file should contain a name for the polygon followed
// by a space-separated list of lat/lon points defining the polygon:
//    "name lat1 lon1 lat2 lon2... latn lonn"
//
// MET_BASE may be used in the path for the lat/lon polygon file.
//
// e.g. mask_poly = "EAST.poly";
//
mask_poly = "DUGd01.poly";

//
// Beginning and ending elevation values in meters for observations
// to retain.
//
beg_elev = -1000;
end_elev = 100000;

//
// Specify a comma-separated list of PrepBufr report type values to
retain.
// An empty list indicates that all should be retained.
//
//
http://www.emc.ncep.noaa.gov/mmb/data_processing/prepbufr.doc/table_4.htm
//
// e.g. pb_report_type[] = [ 120, 133 ];
//
pb_report_type[] = [];

//
// Specify a comma-separated list of input report type values to retain.
// An empty list indicates that all should be retained.
//
//
http://www.emc.ncep.noaa.gov/mmb/data_processing/prepbufr.doc/table_6.htm
//
// e.g. in_report_type[] = [ 11, 22, 23 ];
//
in_report_type[] = [];

//
// Specify a comma-separated list of instrument type values to retain.
// An empty list indicates that all should be retained.
//
// e.g. instrument_type[] = [ 52, 87 ];
//
instrument_type[] = [];

//
// Beginning and ending vertical levels to retain.
//
beg_level = 1;
end_level = 255;
```

```
//
// Specify a comma-separated list of strings containing grib codes or
// corresponding grib code abbreviations to retain or be derived from
// the available observations.
//
// Grib Codes to be RETAINED:
//    SPFH or 51 for Specific Humidity in kg/kg
//    TMP  or 11 for Temperature in K
//    HGT  or 7  for Height in meters
//    UGRD or 33 for the East-West component of the wind in m/s
//    VGRD or 34 for the North-South component of the wind in m/s
//
// Grib Codes to be DERIVED:
//    DPT   or 17 for Dewpoint Temperature in K
//    WIND  or 32 for Wind Speed in m/s
//    RH    or 52 for Relative Humidity in %
//    MIXR  or 53 for Humidity Mixing Ratio in kg/kg
//    PRMSL or  2 for Pressure Reduced to Mean Sea Level in Pa
//
// http://www.nco.ncep.noaa.gov/pmb/docs/on388/table2.html
//
// e.g. obs_grib_code[] = [ "TMP", "UGRD", "VGRD", "WIND" ];
//
obs_grib_code[] = [ "TMP", "HGT", "UGRD", "VGRD", "DPT", "WIND", "RH",
"PRMSL" ];

//
// Quality mark threshold to indicate which observations to retain.
// Observations with a quality mark equal to or LESS THAN this threshold
// will be retained, while observations with a quality mark GREATER THAN
// this threshold will be discarded.
//
http://www.emc.ncep.noaa.gov/mmb/data_processing/prepbufr.doc/table_7.htm
//
quality_mark_thresh = 2;

//
// Flag to indicate whether observations should be drawn from the top
// of the event stack (most quality controlled) or the bottom of the
// event stack (most raw).  A value of 1 indicates that the top of the
// event stack should be used while a value of zero indicates that the
// bottom should be used.
//
event_stack_flag = 1;

//
// Space comma-separated list of data level categorie values to retain,
// where a value of:
//    0 = Surface level (mass reports only)
//    1 = Mandatory level (upper-air profile reports)
//    2 = Significant temperature level (upper-air profile reports)
//    2 = Significant temperature and winds-by-pressure level
//        (future combined mass and wind upper-air reports)
```

```
//    3 = Winds-by-pressure level (upper-air profile reports)
//    4 = Winds-by-height level (upper-air profile reports)
//    5 = Tropopause level (upper-air profile reports)
//    6 = Reports on a single level
//        (e.g., aircraft, satellite-wind, surface wind,
//         precipitable water retrievals, etc.)
//    7 = Auxiliary levels generated via interpolation from spanning
levels
//        (upper-air profile reports)
// An empty list indicates that all should be retained.
//
//
http://www.emc.ncep.noaa.gov/mmb/data_processing/prepbufr.doc/table_1.htm
//
// e.g. level_category[] = [ 0, 1 ];
//
level_category[] = [];

//
// Directory where temp files should be written by the PB2NC tool
//
tmp_dir = "/tmp";

//
// Indicate a version number for the contents of this configuration file.
// The value should generally not be modified.
//
version = "V2.0";
```

PB2NCConfig_DUGd01_hr2

```
////////////////////////////////////////////////////////////////////////////
//////
//
// pb2nc configuration file for DUG domain 1, hour 2,
082410:~jraby/MET_obs/pbrun/PB2NCConfig_DUGd01_hr2
//
////////////////////////////////////////////////////////////////////////////
//////

//
// Stratify the observation data in the PrepBufr files in the following
// ways:
//  (1) by message type: supply a list of PrepBufr message types
//      to retain (i.e. AIRCFT)
//  (2) by station id: supply a list of observation stations to retain
//  (3) by valid time: supply starting and ending times in form
//      YYYY-MM-DD HH:MM:SS UTC
//  (4) by location: supply either an NCEP masking grid, a masking
//      lat/lon polygon or a file to a mask lat/lon polygon
//  (5) by elevation: supply min/max elevation values
//  (6) by report type (typ): supply a list of report types to retain
//  (7) by instrument type (itp): supply a list of instrument type to
//      retain
//  (8) by vertical level: supply min/max vertical levels
//  (9) by variable type: supply a list of variable types to retain
//      P, Q, T, Z, U, V
// (11) by quality mark: supply a quality mark threshold
// (12) Flag to retain values for all quality marks, or just the first
//      quality mark (highest)
// (13) by data level category: supply a list of category types to
//      retain.
//
//      0 - Surface level (mass reports only)
//      1 - Mandatory level (upper-air profile reports)
//      2 - Significant temperature level (upper-air profile reports)
//      2 - Significant temperature and winds-by-pressure level
//          (future combined mass and wind upper-air reports)
//      3 - Winds-by-pressure level (upper-air profile reports)
//      4 - Winds-by-height level (upper-air profile reports)
//      5 - Tropopause level (upper-air profile reports)
//      6 - Reports on a single level
//          (e.g., aircraft, satellite-wind, surface wind,
//           precipitable water retrievals, etc.)
//      7 - Auxiliary levels generated via interpolation from spanning
levels
//          (upper-air profile reports)
//

//
// Specify a comma-separated list of PrepBufr message type strings to
retain.
// An empty list indicates that all should be retained.
```

```
// List of valid message types:
//    ADPUPA AIRCAR AIRCFT ADPSFC ERS1DA GOESND GPSIPW
//    MSONET PROFLR QKSWND RASSDA SATEMP SATWND SFCBOG
//    SFCSHP SPSSMI SYNDAT VADWND
//    ANYAIR (= AIRCAR, AIRCFT)
//    ANYSFC (= ADPSFC, SFCSHP, ADPUPA, PROFLR)
//    ONLYSF (= ADPSFC, SFCSHP)
//
http://www.emc.ncep.noaa.gov/mmb/data_processing/prepbufr.doc/table_1.htm
//
// e.g. message_type[] = [ "ADPUPA", "AIRCAR" ];
//
message_type[] = [ "ADPSFC", "ADPUPA", "ANYAIR" ];

//
// Specify a comma-separated list of station ID strings to retain.
// An empty list indicates that all should be retained.
//
// e.g. station_id[] = [ "KDEN" ];
//
station_id[] = [];

//
// Beginning and ending time offset values in seconds for observations
// to retain.  The valid time window for retaining observations is
// defined in reference to the observation time.  So observations with
// a valid time falling in the window [obs_time+beg_ds, obs_time+end_ds]
// will be retained.
//
beg_ds = -900;
end_ds =  900;

//
// Specify the name of a single grid to be used in masking the data.
// An empty string indicates that no grid should be used.  The standard
// NCEP grids are named "GNNN" where NNN indicates the three digit grid
number.
//
// http://www.nco.ncep.noaa.gov/pmb/docs/on388/tableb.html
//
// e.g. mask_grid = "G212";
//
mask_grid = "";

//
// Specify a single lat/lon polygon file to be used in masking the data
over
// which to perform scoring.  An empty string indicates that no polygon
mask
// should be used.
//
// Latitude values are given in degrees north and longitude values are
// given in degrees east.  By default, the first and last points are
// connected.
```

```
//
// The lat/lon polygon file should contain a name for the polygon followed
// by a space-separated list of lat/lon points defining the polygon:
//    "name lat1 lon1 lat2 lon2... latn lonn"
//
// MET_BASE may be used in the path for the lat/lon polygon file.
//
// e.g. mask_poly = "EAST.poly";
//
mask_poly = "DUGd01.poly";

//
// Beginning and ending elevation values in meters for observations
// to retain.
//
beg_elev = -1000;
end_elev = 100000;

//
// Specify a comma-separated list of PrepBufr report type values to
retain.
// An empty list indicates that all should be retained.
//
//
http://www.emc.ncep.noaa.gov/mmb/data_processing/prepbufr.doc/table_4.htm
//
// e.g. pb_report_type[] = [ 120, 133 ];
//
pb_report_type[] = [];

//
// Specify a comma-separated list of input report type values to retain.
// An empty list indicates that all should be retained.
//
//
http://www.emc.ncep.noaa.gov/mmb/data_processing/prepbufr.doc/table_6.htm
//
// e.g. in_report_type[] = [ 11, 22, 23 ];
//
in_report_type[] = [];

//
// Specify a comma-separated list of instrument type values to retain.
// An empty list indicates that all should be retained.
//
// e.g. instrument_type[] = [ 52, 87 ];
//
instrument_type[] = [];

//
// Beginning and ending vertical levels to retain.
//
beg_level = 1;
end_level = 255;
```

```
//
// Specify a comma-separated list of strings containing grib codes or
// corresponding grib code abbreviations to retain or be derived from
// the available observations.
//
// Grib Codes to be RETAINED:
//    SPFH or 51 for Specific Humidity in kg/kg
//    TMP  or 11 for Temperature in K
//    HGT  or 7  for Height in meters
//    UGRD or 33 for the East-West component of the wind in m/s
//    VGRD or 34 for the North-South component of the wind in m/s
//
// Grib Codes to be DERIVED:
//    DPT   or 17 for Dewpoint Temperature in K
//    WIND  or 32 for Wind Speed in m/s
//    RH    or 52 for Relative Humidity in %
//    MIXR  or 53 for Humidity Mixing Ratio in kg/kg
//    PRMSL or  2 for Pressure Reduced to Mean Sea Level in Pa
//
// http://www.nco.ncep.noaa.gov/pmb/docs/on388/table2.html
//
// e.g. obs_grib_code[] = [ "TMP", "UGRD", "VGRD", "WIND" ];
//
obs_grib_code[] = [ "TMP", "HGT", "UGRD", "VGRD", "DPT", "WIND", "RH",
"PRMSL" ];

//
// Quality mark threshold to indicate which observations to retain.
// Observations with a quality mark equal to or LESS THAN this threshold
// will be retained, while observations with a quality mark GREATER THAN
// this threshold will be discarded.
//
http://www.emc.ncep.noaa.gov/mmb/data_processing/prepbufr.doc/table_7.htm
//
quality_mark_thresh = 2;

//
// Flag to indicate whether observations should be drawn from the top
// of the event stack (most quality controlled) or the bottom of the
// event stack (most raw).  A value of 1 indicates that the top of the
// event stack should be used while a value of zero indicates that the
// bottom should be used.
//
event_stack_flag = 1;

//
// Space comma-separated list of data level categorie values to retain,
// where a value of:
//    0 = Surface level (mass reports only)
//    1 = Mandatory level (upper-air profile reports)
//    2 = Significant temperature level (upper-air profile reports)
//    2 = Significant temperature and winds-by-pressure level
//        (future combined mass and wind upper-air reports)
```

```
//    3 = Winds-by-pressure level (upper-air profile reports)
//    4 = Winds-by-height level (upper-air profile reports)
//    5 = Tropopause level (upper-air profile reports)
//    6 = Reports on a single level
//        (e.g., aircraft, satellite-wind, surface wind,
//         precipitable water retrievals, etc.)
//    7 = Auxiliary levels generated via interpolation from spanning
levels
//        (upper-air profile reports)
// An empty list indicates that all should be retained.
//
//
http://www.emc.ncep.noaa.gov/mmb/data_processing/prepbufr.doc/table_1.htm
//
// e.g. level_category[] = [ 0, 1 ];
//
level_category[] = [];

//
// Directory where temp files should be written by the PB2NC tool
//
tmp_dir = "/tmp";

//
// Indicate a version number for the contents of this configuration file.
// The value should generally not be modified.
//
version = "V2.0";
```

PB2NCConfig_DUGd01_hr3

```
////////////////////////////////////////////////////////////////////////////
//////
//
// pb2nc configuration file for DUG domain 1, hour 3,
082410:~jraby/MET_obs/pbrun/PB2NCConfig_DUGd01_hr3
//
////////////////////////////////////////////////////////////////////////////
//////

//
// Stratify the observation data in the PrepBufr files in the following
// ways:
//  (1) by message type: supply a list of PrepBufr message types
//      to retain (i.e. AIRCFT)
//  (2) by station id: supply a list of observation stations to retain
//  (3) by valid time: supply starting and ending times in form
//      YYYY-MM-DD HH:MM:SS UTC
//  (4) by location: supply either an NCEP masking grid, a masking
//      lat/lon polygon or a file to a mask lat/lon polygon
//  (5) by elevation: supply min/max elevation values
//  (6) by report type (typ): supply a list of report types to retain
//  (7) by instrument type (itp): supply a list of instrument type to
//      retain
//  (8) by vertical level: supply min/max vertical levels
//  (9) by variable type: supply a list of variable types to retain
//      P, Q, T, Z, U, V
// (11) by quality mark: supply a quality mark threshold
// (12) Flag to retain values for all quality marks, or just the first
//      quality mark (highest)
// (13) by data level category: supply a list of category types to
//      retain.
//
//      0 - Surface level (mass reports only)
//      1 - Mandatory level (upper-air profile reports)
//      2 - Significant temperature level (upper-air profile reports)
//      2 - Significant temperature and winds-by-pressure level
//          (future combined mass and wind upper-air reports)
//      3 - Winds-by-pressure level (upper-air profile reports)
//      4 - Winds-by-height level (upper-air profile reports)
//      5 - Tropopause level (upper-air profile reports)
//      6 - Reports on a single level
//          (e.g., aircraft, satellite-wind, surface wind,
//           precipitable water retrievals, etc.)
//      7 - Auxiliary levels generated via interpolation from spanning
levels
//          (upper-air profile reports)
//

//
// Specify a comma-separated list of PrepBufr message type strings to
retain.
// An empty list indicates that all should be retained.
```

```
// List of valid message types:
//    ADPUPA AIRCAR AIRCFT ADPSFC ERS1DA GOESND GPSIPW
//    MSONET PROFLR QKSWND RASSDA SATEMP SATWND SFCBOG
//    SFCSHP SPSSMI SYNDAT VADWND
//    ANYAIR (= AIRCAR, AIRCFT)
//    ANYSFC (= ADPSFC, SFCSHP, ADPUPA, PROFLR)
//    ONLYSF (= ADPSFC, SFCSHP)
//
http://www.emc.ncep.noaa.gov/mmb/data_processing/prepbufr.doc/table_1.htm
//
// e.g. message_type[] = [ "ADPUPA", "AIRCAR" ];
//
message_type[] = [ "ADPSFC", "ADPUPA", "ANYAIR" ];

//
// Specify a comma-separated list of station ID strings to retain.
// An empty list indicates that all should be retained.
//
// e.g. station_id[] = [ "KDEN" ];
//
station_id[] = [];

//
// Beginning and ending time offset values in seconds for observations
// to retain.  The valid time window for retaining observations is
// defined in reference to the observation time.  So observations with
// a valid time falling in the window [obs_time+beg_ds, obs_time+end_ds]
// will be retained.
//
beg_ds =  2700;
end_ds =  4500;

//
// Specify the name of a single grid to be used in masking the data.
// An empty string indicates that no grid should be used.  The standard
// NCEP grids are named "GNNN" where NNN indicates the three digit grid
number.
//
// http://www.nco.ncep.noaa.gov/pmb/docs/on388/tableb.html
//
// e.g. mask_grid = "G212";
//
mask_grid = "";

//
// Specify a single lat/lon polygon file to be used in masking the data
over
// which to perform scoring.  An empty string indicates that no polygon
mask
// should be used.
//
// Latitude values are given in degrees north and longitude values are
// given in degrees east.  By default, the first and last points are
// connected.
```

```
//
// The lat/lon polygon file should contain a name for the polygon followed
// by a space-separated list of lat/lon points defining the polygon:
//    "name lat1 lon1 lat2 lon2... latn lonn"
//
// MET_BASE may be used in the path for the lat/lon polygon file.
//
// e.g. mask_poly = "EAST.poly";
//
mask_poly = "DUGd01.poly";

//
// Beginning and ending elevation values in meters for observations
// to retain.
//
beg_elev = -1000;
end_elev = 100000;

//
// Specify a comma-separated list of PrepBufr report type values to
retain.
// An empty list indicates that all should be retained.
//
//
http://www.emc.ncep.noaa.gov/mmb/data_processing/prepbufr.doc/table_4.htm
//
// e.g. pb_report_type[] = [ 120, 133 ];
//
pb_report_type[] = [];

//
// Specify a comma-separated list of input report type values to retain.
// An empty list indicates that all should be retained.
//
//
http://www.emc.ncep.noaa.gov/mmb/data_processing/prepbufr.doc/table_6.htm
//
// e.g. in_report_type[] = [ 11, 22, 23 ];
//
in_report_type[] = [];

//
// Specify a comma-separated list of instrument type values to retain.
// An empty list indicates that all should be retained.
//
// e.g. instrument_type[] = [ 52, 87 ];
//
instrument_type[] = [];

//
// Beginning and ending vertical levels to retain.
//
beg_level = 1;
end_level = 255;
```

```
//
// Specify a comma-separated list of strings containing grib codes or
// corresponding grib code abbreviations to retain or be derived from
// the available observations.
//
// Grib Codes to be RETAINED:
//    SPFH or 51 for Specific Humidity in kg/kg
//    TMP  or 11 for Temperature in K
//    HGT  or 7  for Height in meters
//    UGRD or 33 for the East-West component of the wind in m/s
//    VGRD or 34 for the North-South component of the wind in m/s
//
// Grib Codes to be DERIVED:
//    DPT   or 17 for Dewpoint Temperature in K
//    WIND  or 32 for Wind Speed in m/s
//    RH    or 52 for Relative Humidity in %
//    MIXR  or 53 for Humidity Mixing Ratio in kg/kg
//    PRMSL or  2 for Pressure Reduced to Mean Sea Level in Pa
//
// http://www.nco.ncep.noaa.gov/pmb/docs/on388/table2.html
//
// e.g. obs_grib_code[] = [ "TMP", "UGRD", "VGRD", "WIND" ];
//
obs_grib_code[] = [ "TMP", "HGT", "UGRD", "VGRD", "DPT", "WIND", "RH",
"PRMSL" ];

//
// Quality mark threshold to indicate which observations to retain.
// Observations with a quality mark equal to or LESS THAN this threshold
// will be retained, while observations with a quality mark GREATER THAN
// this threshold will be discarded.
//
http://www.emc.ncep.noaa.gov/mmb/data_processing/prepbufr.doc/table_7.htm
//
quality_mark_thresh = 2;

//
// Flag to indicate whether observations should be drawn from the top
// of the event stack (most quality controlled) or the bottom of the
// event stack (most raw).  A value of 1 indicates that the top of the
// event stack should be used while a value of zero indicates that the
// bottom should be used.
//
event_stack_flag = 1;

//
// Space comma-separated list of data level categorie values to retain,
// where a value of:
//    0 = Surface level (mass reports only)
//    1 = Mandatory level (upper-air profile reports)
//    2 = Significant temperature level (upper-air profile reports)
//    2 = Significant temperature and winds-by-pressure level
//        (future combined mass and wind upper-air reports)
```

```
//    3 = Winds-by-pressure level (upper-air profile reports)
//    4 = Winds-by-height level (upper-air profile reports)
//    5 = Tropopause level (upper-air profile reports)
//    6 = Reports on a single level
//        (e.g., aircraft, satellite-wind, surface wind,
//         precipitable water retrievals, etc.)
//    7 = Auxiliary levels generated via interpolation from spanning
levels
//        (upper-air profile reports)
// An empty list indicates that all should be retained.
//
//
http://www.emc.ncep.noaa.gov/mmb/data_processing/prepbufr.doc/table_1.htm
//
// e.g. level_category[] = [ 0, 1 ];
//
level_category[] = [];

//
// Directory where temp files should be written by the PB2NC tool
//
tmp_dir = "/tmp";

//
// Indicate a version number for the contents of this configuration file.
// The value should generally not be modified.
//
version = "V2.0";
```

pb2nc_DUGd02_06_all.sh_template

```
#!/bin/sh
# This is the original script from Sauter
# Assigned a date of 082510 when incorporated into User’s Guide

echo
echo"***Running PB2NC on PrepBufr files***"
echo "***Files for use with WRF initialized at 06Z on Start_Date***"

mkdir ../ncobs/Start_Date

echo "hour 0"
pb2nc /opt3b/PrepBUFR/Start_Date/ndas.t12z.prepbufr.tm06.nr
../ncobs/Start_Date/DUGd02_06_00_pb.nc ./PB2NCConfig_DUGd02_hr2 -v 2
echo "hour 1"
pb2nc /opt3b/PrepBUFR/Start_Date/ndas.t12z.prepbufr.tm06.nr
../ncobs/Start_Date/DUGd02_06_01_pb.nc ./PB2NCConfig_DUGd02_hr3 -v 2
echo "hour 2"
pb2nc /opt3b/PrepBUFR/Start_Date/ndas.t12z.prepbufr.tm03.nr
../ncobs/Start_Date/DUGd02_06_02_pb.nc ./PB2NCConfig_DUGd02_hr1 -v 2
echo "hour 3"
pb2nc /opt3b/PrepBUFR/Start_Date/ndas.t12z.prepbufr.tm03.nr
../ncobs/Start_Date/DUGd02_06_03_pb.nc ./PB2NCConfig_DUGd02_hr2 -v 2
echo "hour 4"
pb2nc /opt3b/PrepBUFR/Start_Date/ndas.t12z.prepbufr.tm03.nr
../ncobs/Start_Date/DUGd02_06_04_pb.nc ./PB2NCConfig_DUGd02_hr3 -v 2
echo "hour 5"
pb2nc /opt3b/PrepBUFR/Start_Date/ndas.t18z.prepbufr.tm06.nr
../ncobs/Start_Date/DUGd02_06_05_pb.nc ./PB2NCConfig_DUGd02_hr1 -v 2
echo "hour 6"
pb2nc /opt3b/PrepBUFR/Start_Date/ndas.t18z.prepbufr.tm06.nr
../ncobs/Start_Date/DUGd02_06_06_pb.nc ./PB2NCConfig_DUGd02_hr2 -v 2
echo "hour 7"
pb2nc /opt3b/PrepBUFR/Start_Date/ndas.t18z.prepbufr.tm06.nr
../ncobs/Start_Date/DUGd02_06_07_pb.nc ./PB2NCConfig_DUGd02_hr3 -v 2
echo "hour 8"
pb2nc /opt3b/PrepBUFR/Start_Date/ndas.t18z.prepbufr.tm03.nr
../ncobs/Start_Date/DUGd02_06_08_pb.nc ./PB2NCConfig_DUGd02_hr1 -v 2
echo "hour 9"
pb2nc /opt3b/PrepBUFR/Start_Date/ndas.t18z.prepbufr.tm03.nr
../ncobs/Start_Date/DUGd02_06_09_pb.nc ./PB2NCConfig_DUGd02_hr2 -v 2
echo "hour 10"
pb2nc /opt3b/PrepBUFR/Start_Date/ndas.t18z.prepbufr.tm03.nr
../ncobs/Start_Date/DUGd02_06_10_pb.nc ./PB2NCConfig_DUGd02_hr3 -v 2
echo "hour 11"
pb2nc /opt3b/PrepBUFR/Stop_Date/ndas.t00z.prepbufr.tm06.nr
../ncobs/Start_Date/DUGd02_06_11_pb.nc ./PB2NCConfig_DUGd02_hr1 -v 2
echo "hour 12"
pb2nc /opt3b/PrepBUFR/Stop_Date/ndas.t00z.prepbufr.tm06.nr
../ncobs/Start_Date/DUGd02_06_12_pb.nc ./PB2NCConfig_DUGd02_hr2 -v 2
echo "hour 13"
pb2nc /opt3b/PrepBUFR/Stop_Date/ndas.t00z.prepbufr.tm06.nr
../ncobs/Start_Date/DUGd02_06_13_pb.nc ./PB2NCConfig_DUGd02_hr3 -v 2
```

```
echo "hour 14"
pb2nc /opt3b/PrepBUFR/Stop_Date/ndas.t00z.prepbufr.tm03.nr
../ncobs/Start_Date/DUGd02_06_14_pb.nc ./PB2NCConfig_DUGd02_hr1 -v 2
echo "hour 15"
pb2nc /opt3b/PrepBUFR/Stop_Date/ndas.t00z.prepbufr.tm03.nr
../ncobs/Start_Date/DUGd02_06_15_pb.nc ./PB2NCConfig_DUGd02_hr2 -v 2
echo "hour 16"
pb2nc /opt3b/PrepBUFR/Stop_Date/ndas.t00z.prepbufr.tm03.nr
../ncobs/Start_Date/DUGd02_06_16_pb.nc ./PB2NCConfig_DUGd02_hr3 -v 2
echo "hour 17"
pb2nc /opt3b/PrepBUFR/Stop_Date/ndas.t06z.prepbufr.tm06.nr
../ncobs/Start_Date/DUGd02_06_17_pb.nc ./PB2NCConfig_DUGd02_hr1 -v 2
echo "hour 18"
pb2nc /opt3b/PrepBUFR/Stop_Date/ndas.t06z.prepbufr.tm06.nr
../ncobs/Start_Date/DUGd02_06_18_pb.nc ./PB2NCConfig_DUGd02_hr2 -v 2
echo "hour 19"
pb2nc /opt3b/PrepBUFR/Stop_Date/ndas.t06z.prepbufr.tm06.nr
../ncobs/Start_Date/DUGd02_06_19_pb.nc ./PB2NCConfig_DUGd02_hr3 -v 2
echo "hour 20"
pb2nc /opt3b/PrepBUFR/Stop_Date/ndas.t06z.prepbufr.tm03.nr
../ncobs/Start_Date/DUGd02_06_20_pb.nc ./PB2NCConfig_DUGd02_hr1 -v 2
echo "hour 21"
pb2nc /opt3b/PrepBUFR/Stop_Date/ndas.t06z.prepbufr.tm03.nr
../ncobs/Start_Date/DUGd02_06_21_pb.nc ./PB2NCConfig_DUGd02_hr2 -v 2
echo "hour 22"
pb2nc /opt3b/PrepBUFR/Stop_Date/ndas.t06z.prepbufr.tm03.nr
../ncobs/Start_Date/DUGd02_06_22_pb.nc ./PB2NCConfig_DUGd02_hr3 -v 2
echo "hour 23"
pb2nc /opt3b/PrepBUFR/Stop_Date/ndas.t12z.prepbufr.tm06.nr
../ncobs/Start_Date/DUGd02_06_23_pb.nc ./PB2NCConfig_DUGd02_hr1 -v 2
echo "hour 24"
pb2nc /opt3b/PrepBUFR/Stop_Date/ndas.t12z.prepbufr.tm06.nr
../ncobs/Start_Date/DUGd02_06_24_pb.nc ./PB2NCConfig_DUGd02_hr2 -v 2
```

pb2nc_DUGd02_06_all.sh

```
#!/bin/sh
# This is the original script from Sauter
# Assigned a date of 082510 when incorporated into User’s Guide

echo
echo"***Running PB2NC on PrepBufr files***"
echo "***Files for use with WRF initialized at 06Z on 20100114***"

mkdir ../ncobs/20100114

echo "hour 0"
pb2nc /opt3b/PrepBUFR/20100114/ndas.t12z.prepbufr.tm06.nr
../ncobs/20100114/DUGd02_06_00_pb.nc ./PB2NCConfig_DUGd02_hr2 -v 2
echo "hour 1"
pb2nc /opt3b/PrepBUFR/20100114/ndas.t12z.prepbufr.tm06.nr
../ncobs/20100114/DUGd02_06_01_pb.nc ./PB2NCConfig_DUGd02_hr3 -v 2
echo "hour 2"
pb2nc /opt3b/PrepBUFR/20100114/ndas.t12z.prepbufr.tm03.nr
../ncobs/20100114/DUGd02_06_02_pb.nc ./PB2NCConfig_DUGd02_hr1 -v 2
echo "hour 3"
pb2nc /opt3b/PrepBUFR/20100114/ndas.t12z.prepbufr.tm03.nr
../ncobs/20100114/DUGd02_06_03_pb.nc ./PB2NCConfig_DUGd02_hr2 -v 2
echo "hour 4"
pb2nc /opt3b/PrepBUFR/20100114/ndas.t12z.prepbufr.tm03.nr
../ncobs/20100114/DUGd02_06_04_pb.nc ./PB2NCConfig_DUGd02_hr3 -v 2
echo "hour 5"
pb2nc /opt3b/PrepBUFR/20100114/ndas.t18z.prepbufr.tm06.nr
../ncobs/20100114/DUGd02_06_05_pb.nc ./PB2NCConfig_DUGd02_hr1 -v 2
echo "hour 6"
pb2nc /opt3b/PrepBUFR/20100114/ndas.t18z.prepbufr.tm06.nr
../ncobs/20100114/DUGd02_06_06_pb.nc ./PB2NCConfig_DUGd02_hr2 -v 2
echo "hour 7"
pb2nc /opt3b/PrepBUFR/20100114/ndas.t18z.prepbufr.tm06.nr
../ncobs/20100114/DUGd02_06_07_pb.nc ./PB2NCConfig_DUGd02_hr3 -v 2
echo "hour 8"
pb2nc /opt3b/PrepBUFR/20100114/ndas.t18z.prepbufr.tm03.nr
../ncobs/20100114/DUGd02_06_08_pb.nc ./PB2NCConfig_DUGd02_hr1 -v 2
echo "hour 9"
pb2nc /opt3b/PrepBUFR/20100114/ndas.t18z.prepbufr.tm03.nr
../ncobs/20100114/DUGd02_06_09_pb.nc ./PB2NCConfig_DUGd02_hr2 -v 2
echo "hour 10"
pb2nc /opt3b/PrepBUFR/20100114/ndas.t18z.prepbufr.tm03.nr
../ncobs/20100114/DUGd02_06_10_pb.nc ./PB2NCConfig_DUGd02_hr3 -v 2
echo "hour 11"
pb2nc /opt3b/PrepBUFR/20100115/ndas.t00z.prepbufr.tm06.nr
../ncobs/20100114/DUGd02_06_11_pb.nc ./PB2NCConfig_DUGd02_hr1 -v 2
echo "hour 12"
pb2nc /opt3b/PrepBUFR/20100115/ndas.t00z.prepbufr.tm06.nr
../ncobs/20100114/DUGd02_06_12_pb.nc ./PB2NCConfig_DUGd02_hr2 -v 2
echo "hour 13"
pb2nc /opt3b/PrepBUFR/20100115/ndas.t00z.prepbufr.tm06.nr
../ncobs/20100114/DUGd02_06_13_pb.nc ./PB2NCConfig_DUGd02_hr3 -v 2
```

```
echo "hour 14"
pb2nc /opt3b/PrepBUFR/20100115/ndas.t00z.prepbufr.tm03.nr
../ncobs/20100114/DUGd02_06_14_pb.nc ./PB2NCConfig_DUGd02_hr1 -v 2
echo "hour 15"
pb2nc /opt3b/PrepBUFR/20100115/ndas.t00z.prepbufr.tm03.nr
../ncobs/20100114/DUGd02_06_15_pb.nc ./PB2NCConfig_DUGd02_hr2 -v 2
echo "hour 16"
pb2nc /opt3b/PrepBUFR/20100115/ndas.t00z.prepbufr.tm03.nr
../ncobs/20100114/DUGd02_06_16_pb.nc ./PB2NCConfig_DUGd02_hr3 -v 2
echo "hour 17"
pb2nc /opt3b/PrepBUFR/20100115/ndas.t06z.prepbufr.tm06.nr
../ncobs/20100114/DUGd02_06_17_pb.nc ./PB2NCConfig_DUGd02_hr1 -v 2
echo "hour 18"
pb2nc /opt3b/PrepBUFR/20100115/ndas.t06z.prepbufr.tm06.nr
../ncobs/20100114/DUGd02_06_18_pb.nc ./PB2NCConfig_DUGd02_hr2 -v 2
echo "hour 19"
pb2nc /opt3b/PrepBUFR/20100115/ndas.t06z.prepbufr.tm06.nr
../ncobs/20100114/DUGd02_06_19_pb.nc ./PB2NCConfig_DUGd02_hr3 -v 2
echo "hour 20"
pb2nc /opt3b/PrepBUFR/20100115/ndas.t06z.prepbufr.tm03.nr
../ncobs/20100114/DUGd02_06_20_pb.nc ./PB2NCConfig_DUGd02_hr1 -v 2
echo "hour 21"
pb2nc /opt3b/PrepBUFR/20100115/ndas.t06z.prepbufr.tm03.nr
../ncobs/20100114/DUGd02_06_21_pb.nc ./PB2NCConfig_DUGd02_hr2 -v 2
echo "hour 22"
pb2nc /opt3b/PrepBUFR/20100115/ndas.t06z.prepbufr.tm03.nr
../ncobs/20100114/DUGd02_06_22_pb.nc ./PB2NCConfig_DUGd02_hr3 -v 2
echo "hour 23"
pb2nc /opt3b/PrepBUFR/20100115/ndas.t12z.prepbufr.tm06.nr
../ncobs/20100114/DUGd02_06_23_pb.nc ./PB2NCConfig_DUGd02_hr1 -v 2
echo "hour 24"
pb2nc /opt3b/PrepBUFR/20100115/ndas.t12z.prepbufr.tm06.nr
../ncobs/20100114/DUGd02_06_24_pb.nc ./PB2NCConfig_DUGd02_hr2 -v 2
```

PB2NCConfig_DUGd02_hr1

```
////////////////////////////////////////////////////////////////////////////
//////
//
// pb2nc configuration file for DUG domain 2, hour 1,
082410:~jraby/MET_obs/pbrun/PB2NCConfig_DUGd02_hr1
//
////////////////////////////////////////////////////////////////////////////
//////

//
// Stratify the observation data in the PrepBufr files in the following
// ways:
//  (1) by message type: supply a list of PrepBufr message types
//      to retain (i.e. AIRCFT)
//  (2) by station id: supply a list of observation stations to retain
//  (3) by valid time: supply starting and ending times in form
//      YYYY-MM-DD HH:MM:SS UTC
//  (4) by location: supply either an NCEP masking grid, a masking
//      lat/lon polygon or a file to a mask lat/lon polygon
//  (5) by elevation: supply min/max elevation values
//  (6) by report type (typ): supply a list of report types to retain
//  (7) by instrument type (itp): supply a list of instrument type to
//      retain
//  (8) by vertical level: supply min/max vertical levels
//  (9) by variable type: supply a list of variable types to retain
//      P, Q, T, Z, U, V
// (11) by quality mark: supply a quality mark threshold
// (12) Flag to retain values for all quality marks, or just the first
//      quality mark (highest)
// (13) by data level category: supply a list of category types to
//      retain.
//
//      0 - Surface level (mass reports only)
//      1 - Mandatory level (upper-air profile reports)
//      2 - Significant temperature level (upper-air profile reports)
//      2 - Significant temperature and winds-by-pressure level
//          (future combined mass and wind upper-air reports)
//      3 - Winds-by-pressure level (upper-air profile reports)
//      4 - Winds-by-height level (upper-air profile reports)
//      5 - Tropopause level (upper-air profile reports)
//      6 - Reports on a single level
//          (e.g., aircraft, satellite-wind, surface wind,
//           precipitable water retrievals, etc.)
//      7 - Auxiliary levels generated via interpolation from spanning
levels
//          (upper-air profile reports)
//

//
// Specify a comma-separated list of PrepBufr message type strings to
retain.
// An empty list indicates that all should be retained.
```

```
// List of valid message types:
//    ADPUPA AIRCAR AIRCFT ADPSFC ERS1DA GOESND GPSIPW
//    MSONET PROFLR QKSWND RASSDA SATEMP SATWND SFCBOG
//    SFCSHP SPSSMI SYNDAT VADWND
//    ANYAIR (= AIRCAR, AIRCFT)
//    ANYSFC (= ADPSFC, SFCSHP, ADPUPA, PROFLR)
//    ONLYSF (= ADPSFC, SFCSHP)
//
http://www.emc.ncep.noaa.gov/mmb/data_processing/prepbufr.doc/table_1.htm
//
// e.g. message_type[] = [ "ADPUPA", "AIRCAR" ];
//
message_type[] = ["ADPSFC", "ADPUPA", "ANYAIR"];

//
// Specify a comma-separated list of station ID strings to retain.
// An empty list indicates that all should be retained.
//
// e.g. station_id[] = [ "KDEN" ];
//
station_id[] = [];

//
// Beginning and ending time offset values in seconds for observations
// to retain.  The valid time window for retaining observations is
// defined in reference to the observation time.  So observations with
// a valid time falling in the window [obs_time+beg_ds, obs_time+end_ds]
// will be retained.
//
beg_ds = -4500;
end_ds = -2700;

//
// Specify the name of a single grid to be used in masking the data.
// An empty string indicates that no grid should be used.  The standard
// NCEP grids are named "GNNN" where NNN indicates the three digit grid
number.
//
// http://www.nco.ncep.noaa.gov/pmb/docs/on388/tableb.html
//
// e.g. mask_grid = "G212";
//
mask_grid = "";

//
// Specify a single lat/lon polygon file to be used in masking the data
over
// which to perform scoring.  An empty string indicates that no polygon
mask
// should be used.
//
// Latitude values are given in degrees north and longitude values are
// given in degrees east.  By default, the first and last points are
// connected.
```

```
//
// The lat/lon polygon file should contain a name for the polygon followed
// by a space-separated list of lat/lon points defining the polygon:
//    "name lat1 lon1 lat2 lon2... latn lonn"
//
// MET_BASE may be used in the path for the lat/lon polygon file.
//
// e.g. mask_poly = "EAST.poly";
//
mask_poly = "DUGd02.poly";

//
// Beginning and ending elevation values in meters for observations
// to retain.
//
beg_elev = -1000;
end_elev = 100000;

//
// Specify a comma-separated list of PrepBufr report type values to
retain.
// An empty list indicates that all should be retained.
//
//
http://www.emc.ncep.noaa.gov/mmb/data_processing/prepbufr.doc/table_4.htm
//
// e.g. pb_report_type[] = [ 120, 133 ];
//
pb_report_type[] = [];

//
// Specify a comma-separated list of input report type values to retain.
// An empty list indicates that all should be retained.
//
//
http://www.emc.ncep.noaa.gov/mmb/data_processing/prepbufr.doc/table_6.htm
//
// e.g. in_report_type[] = [ 11, 22, 23 ];
//
in_report_type[] = [];

//
// Specify a comma-separated list of instrument type values to retain.
// An empty list indicates that all should be retained.
//
// e.g. instrument_type[] = [ 52, 87 ];
//
instrument_type[] = [];

//
// Beginning and ending vertical levels to retain.
//
beg_level = 1;
end_level = 255;
```

```
//
// Specify a comma-separated list of strings containing grib codes or
// corresponding grib code abbreviations to retain or be derived from
// the available observations.
//
// Grib Codes to be RETAINED:
//    SPFH or 51 for Specific Humidity in kg/kg
//    TMP  or 11 for Temperature in K
//    HGT  or 7  for Height in meters
//    UGRD or 33 for the East-West component of the wind in m/s
//    VGRD or 34 for the North-South component of the wind in m/s
//
// Grib Codes to be DERIVED:
//    DPT   or 17 for Dewpoint Temperature in K
//    WIND  or 32 for Wind Speed in m/s
//    RH    or 52 for Relative Humidity in %
//    MIXR  or 53 for Humidity Mixing Ratio in kg/kg
//    PRMSL or  2 for Pressure Reduced to Mean Sea Level in Pa
//
// http://www.nco.ncep.noaa.gov/pmb/docs/on388/table2.html
//
// e.g. obs_grib_code[] = [ "TMP", "UGRD", "VGRD", "WIND" ];
//
obs_grib_code[] = [ "TMP", "HGT", "UGRD", "VGRD", "DPT", "WIND", "RH",
"PRMSL" ];

//
// Quality mark threshold to indicate which observations to retain.
// Observations with a quality mark equal to or LESS THAN this threshold
// will be retained, while observations with a quality mark GREATER THAN
// this threshold will be discarded.
//
http://www.emc.ncep.noaa.gov/mmb/data_processing/prepbufr.doc/table_7.htm
//
quality_mark_thresh = 2;

//
// Flag to indicate whether observations should be drawn from the top
// of the event stack (most quality controlled) or the bottom of the
// event stack (most raw).  A value of 1 indicates that the top of the
// event stack should be used while a value of zero indicates that the
// bottom should be used.
//
event_stack_flag = 1;

//
// Space comma-separated list of data level categorie values to retain,
// where a value of:
//    0 = Surface level (mass reports only)
//    1 = Mandatory level (upper-air profile reports)
//    2 = Significant temperature level (upper-air profile reports)
//    2 = Significant temperature and winds-by-pressure level
//        (future combined mass and wind upper-air reports)
```

```
//    3 = Winds-by-pressure level (upper-air profile reports)
//    4 = Winds-by-height level (upper-air profile reports)
//    5 = Tropopause level (upper-air profile reports)
//    6 = Reports on a single level
//        (e.g., aircraft, satellite-wind, surface wind,
//         precipitable water retrievals, etc.)
//    7 = Auxiliary levels generated via interpolation from spanning
levels
//        (upper-air profile reports)
// An empty list indicates that all should be retained.
//
//
http://www.emc.ncep.noaa.gov/mmb/data_processing/prepbufr.doc/table_1.htm
//
// e.g. level_category[] = [ 0, 1 ];
//
level_category[] = [];

//
// Directory where temp files should be written by the PB2NC tool
//
tmp_dir = "/tmp";

//
// Indicate a version number for the contents of this configuration file.
// The value should generally not be modified.
//
version = "V2.0";
```

PB2NCConfig_DUGd02_hr2

```
////////////////////////////////////////////////////////////////////////////
//////
//
// pb2nc configuration file for DUG domain 2, hour 2,
121010:~jraby/MET_obs/pbrun/PB2NCConfig_DUGd02_hr2
//
////////////////////////////////////////////////////////////////////////////
//////

//
// Stratify the observation data in the PrepBufr files in the following
// ways:
//  (1) by message type: supply a list of PrepBufr message types
//      to retain (i.e. AIRCFT)
//  (2) by station id: supply a list of observation stations to retain
//  (3) by valid time: supply starting and ending times in form
//      YYYY-MM-DD HH:MM:SS UTC
//  (4) by location: supply either an NCEP masking grid, a masking
//      lat/lon polygon or a file to a mask lat/lon polygon
//  (5) by elevation: supply min/max elevation values
//  (6) by report type (typ): supply a list of report types to retain
//  (7) by instrument type (itp): supply a list of instrument type to
//      retain
//  (8) by vertical level: supply min/max vertical levels
//  (9) by variable type: supply a list of variable types to retain
//      P, Q, T, Z, U, V
// (11) by quality mark: supply a quality mark threshold
// (12) Flag to retain values for all quality marks, or just the first
//      quality mark (highest)
// (13) by data level category: supply a list of category types to
//      retain.
//
//      0 - Surface level (mass reports only)
//      1 - Mandatory level (upper-air profile reports)
//      2 - Significant temperature level (upper-air profile reports)
//      2 - Significant temperature and winds-by-pressure level
//          (future combined mass and wind upper-air reports)
//      3 - Winds-by-pressure level (upper-air profile reports)
//      4 - Winds-by-height level (upper-air profile reports)
//      5 - Tropopause level (upper-air profile reports)
//      6 - Reports on a single level
//          (e.g., aircraft, satellite-wind, surface wind,
//           precipitable water retrievals, etc.)
//      7 - Auxiliary levels generated via interpolation from spanning
levels
//          (upper-air profile reports)
//

//
// Specify a comma-separated list of PrepBufr message type strings to
retain.
// An empty list indicates that all should be retained.
```

```
// List of valid message types:
//    ADPUPA AIRCAR AIRCFT ADPSFC ERS1DA GOESND GPSIPW
//    MSONET PROFLR QKSWND RASSDA SATEMP SATWND SFCBOG
//    SFCSHP SPSSMI SYNDAT VADWND
//    ANYAIR (= AIRCAR, AIRCFT)
//    ANYSFC (= ADPSFC, SFCSHP, ADPUPA, PROFLR)
//    ONLYSF (= ADPSFC, SFCSHP)
//
http://www.emc.ncep.noaa.gov/mmb/data_processing/prepbufr.doc/table_1.htm
//
// e.g. message_type[] = [ "ADPUPA", "AIRCAR" ];
//
message_type[] = ["ADPSFC", "ADPUPA", "ANYAIR"];

//
// Specify a comma-separated list of station ID strings to retain.
// An empty list indicates that all should be retained.
//
// e.g. station_id[] = [ "KDEN" ];
//
station_id[] = [];

//
// Beginning and ending time offset values in seconds for observations
// to retain.  The valid time window for retaining observations is
// defined in reference to the observation time.  So observations with
// a valid time falling in the window [obs_time+beg_ds, obs_time+end_ds]
// will be retained.
//
beg_ds = -900;
end_ds =  900;

//
// Specify the name of a single grid to be used in masking the data.
// An empty string indicates that no grid should be used.  The standard
// NCEP grids are named "GNNN" where NNN indicates the three digit grid
number.
//
// http://www.nco.ncep.noaa.gov/pmb/docs/on388/tableb.html
//
// e.g. mask_grid = "G212";
//
mask_grid = "";

//
// Specify a single lat/lon polygon file to be used in masking the data
over
// which to perform scoring.  An empty string indicates that no polygon
mask
// should be used.
//
// Latitude values are given in degrees north and longitude values are
// given in degrees east.  By default, the first and last points are
// connected.
```

```
//
// The lat/lon polygon file should contain a name for the polygon followed
// by a space-separated list of lat/lon points defining the polygon:
//    "name lat1 lon1 lat2 lon2... latn lonn"
//
// MET_BASE may be used in the path for the lat/lon polygon file.
//
// e.g. mask_poly = "EAST.poly";
//
mask_poly = "DUGd02.poly";

//
// Beginning and ending elevation values in meters for observations
// to retain.
//
beg_elev = -1000;
end_elev = 100000;

//
// Specify a comma-separated list of PrepBufr report type values to
retain.
// An empty list indicates that all should be retained.
//
//
http://www.emc.ncep.noaa.gov/mmb/data_processing/prepbufr.doc/table_4.htm
//
// e.g. pb_report_type[] = [ 120, 133 ];
//
pb_report_type[] = [];

//
// Specify a comma-separated list of input report type values to retain.
// An empty list indicates that all should be retained.
//
//
http://www.emc.ncep.noaa.gov/mmb/data_processing/prepbufr.doc/table_6.htm
//
// e.g. in_report_type[] = [ 11, 22, 23 ];
//
in_report_type[] = [];

//
// Specify a comma-separated list of instrument type values to retain.
// An empty list indicates that all should be retained.
//
// e.g. instrument_type[] = [ 52, 87 ];
//
instrument_type[] = [];

//
// Beginning and ending vertical levels to retain.
//
beg_level = 1;
end_level = 255;
```

```
//
// Specify a comma-separated list of strings containing grib codes or
// corresponding grib code abbreviations to retain or be derived from
// the available observations.
//
// Grib Codes to be RETAINED:
//    SPFH or 51 for Specific Humidity in kg/kg
//    TMP  or 11 for Temperature in K
//    HGT  or 7  for Height in meters
//    UGRD or 33 for the East-West component of the wind in m/s
//    VGRD or 34 for the North-South component of the wind in m/s
//
// Grib Codes to be DERIVED:
//    DPT   or 17 for Dewpoint Temperature in K
//    WIND  or 32 for Wind Speed in m/s
//    RH    or 52 for Relative Humidity in %
//    MIXR  or 53 for Humidity Mixing Ratio in kg/kg
//    PRMSL or  2 for Pressure Reduced to Mean Sea Level in Pa
//
// http://www.nco.ncep.noaa.gov/pmb/docs/on388/table2.html
//
// e.g. obs_grib_code[] = [ "TMP", "UGRD", "VGRD", "WIND" ];
//
obs_grib_code[] = [ "TMP", "HGT", "UGRD", "VGRD", "DPT", "WIND", "RH",
"PRMSL" ];

//
// Quality mark threshold to indicate which observations to retain.
// Observations with a quality mark equal to or LESS THAN this threshold
// will be retained, while observations with a quality mark GREATER THAN
// this threshold will be discarded.
//
http://www.emc.ncep.noaa.gov/mmb/data_processing/prepbufr.doc/table_7.htm
//
quality_mark_thresh = 2;

//
// Flag to indicate whether observations should be drawn from the top
// of the event stack (most quality controlled) or the bottom of the
// event stack (most raw).  A value of 1 indicates that the top of the
// event stack should be used while a value of zero indicates that the
// bottom should be used.
//
event_stack_flag = 1;

//
// Space comma-separated list of data level categorie values to retain,
// where a value of:
//    0 = Surface level (mass reports only)
//    1 = Mandatory level (upper-air profile reports)
//    2 = Significant temperature level (upper-air profile reports)
//    2 = Significant temperature and winds-by-pressure level
//        (future combined mass and wind upper-air reports)
```

```
//    3 = Winds-by-pressure level (upper-air profile reports)
//    4 = Winds-by-height level (upper-air profile reports)
//    5 = Tropopause level (upper-air profile reports)
//    6 = Reports on a single level
//        (e.g., aircraft, satellite-wind, surface wind,
//         precipitable water retrievals, etc.)
//    7 = Auxiliary levels generated via interpolation from spanning
levels
//        (upper-air profile reports)
// An empty list indicates that all should be retained.
//
//
http://www.emc.ncep.noaa.gov/mmb/data_processing/prepbufr.doc/table_1.htm
//
// e.g. level_category[] = [ 0, 1 ];
//
level_category[] = [];

//
// Directory where temp files should be written by the PB2NC tool
//
tmp_dir = "/tmp";

//
// Indicate a version number for the contents of this configuration file.
// The value should generally not be modified.
//
version = "V2.0";
```

PB2NCConfig_DUGd02_hr3

```
////////////////////////////////////////////////////////////////////////////
//////
//
// pb2nc configuration file for DUG domain 2, hour 3,
121010:~jraby/MET_obs/pbrun/PB2NCConfig_DUGd02_hr3
//
////////////////////////////////////////////////////////////////////////////
//////

//
// Stratify the observation data in the PrepBufr files in the following
// ways:
//  (1) by message type: supply a list of PrepBufr message types
//      to retain (i.e. AIRCFT)
//  (2) by station id: supply a list of observation stations to retain
//  (3) by valid time: supply starting and ending times in form
//      YYYY-MM-DD HH:MM:SS UTC
//  (4) by location: supply either an NCEP masking grid, a masking
//      lat/lon polygon or a file to a mask lat/lon polygon
//  (5) by elevation: supply min/max elevation values
//  (6) by report type (typ): supply a list of report types to retain
//  (7) by instrument type (itp): supply a list of instrument type to
//      retain
//  (8) by vertical level: supply min/max vertical levels
//  (9) by variable type: supply a list of variable types to retain
//      P, Q, T, Z, U, V
// (11) by quality mark: supply a quality mark threshold
// (12) Flag to retain values for all quality marks, or just the first
//      quality mark (highest)
// (13) by data level category: supply a list of category types to
//      retain.
//
//      0 - Surface level (mass reports only)
//      1 - Mandatory level (upper-air profile reports)
//      2 - Significant temperature level (upper-air profile reports)
//      2 - Significant temperature and winds-by-pressure level
//          (future combined mass and wind upper-air reports)
//      3 - Winds-by-pressure level (upper-air profile reports)
//      4 - Winds-by-height level (upper-air profile reports)
//      5 - Tropopause level (upper-air profile reports)
//      6 - Reports on a single level
//          (e.g., aircraft, satellite-wind, surface wind,
//           precipitable water retrievals, etc.)
//      7 - Auxiliary levels generated via interpolation from spanning
levels
//          (upper-air profile reports)
//

//
// Specify a comma-separated list of PrepBufr message type strings to
retain.
// An empty list indicates that all should be retained.
```

```
// List of valid message types:
//    ADPUPA AIRCAR AIRCFT ADPSFC ERS1DA GOESND GPSIPW
//    MSONET PROFLR QKSWND RASSDA SATEMP SATWND SFCBOG
//    SFCSHP SPSSMI SYNDAT VADWND
//    ANYAIR (= AIRCAR, AIRCFT)
//    ANYSFC (= ADPSFC, SFCSHP, ADPUPA, PROFLR)
//    ONLYSF (= ADPSFC, SFCSHP)
//
http://www.emc.ncep.noaa.gov/mmb/data_processing/prepbufr.doc/table_1.htm
//
// e.g. message_type[] = [ "ADPUPA", "AIRCAR" ];
//
message_type[] = ["ADPSFC", "ADPUPA", "ANYAIR"];

//
// Specify a comma-separated list of station ID strings to retain.
// An empty list indicates that all should be retained.
//
// e.g. station_id[] = [ "KDEN" ];
//
station_id[] = [];

//
// Beginning and ending time offset values in seconds for observations
// to retain.  The valid time window for retaining observations is
// defined in reference to the observation time.  So observations with
// a valid time falling in the window [obs_time+beg_ds, obs_time+end_ds]
// will be retained.
//
beg_ds =  2700;
end_ds =  4500;

//
// Specify the name of a single grid to be used in masking the data.
// An empty string indicates that no grid should be used.  The standard
// NCEP grids are named "GNNN" where NNN indicates the three digit grid
number.
//
// http://www.nco.ncep.noaa.gov/pmb/docs/on388/tableb.html
//
// e.g. mask_grid = "G212";
//
mask_grid = "";

//
// Specify a single lat/lon polygon file to be used in masking the data
over
// which to perform scoring.  An empty string indicates that no polygon
mask
// should be used.
//
// Latitude values are given in degrees north and longitude values are
// given in degrees east.  By default, the first and last points are
// connected.
```

```
//
// The lat/lon polygon file should contain a name for the polygon followed
// by a space-separated list of lat/lon points defining the polygon:
//    "name lat1 lon1 lat2 lon2... latn lonn"
//
// MET_BASE may be used in the path for the lat/lon polygon file.
//
// e.g. mask_poly = "EAST.poly";
//
mask_poly = "DUGd02.poly";

//
// Beginning and ending elevation values in meters for observations
// to retain.
//
beg_elev = -1000;
end_elev = 100000;

//
// Specify a comma-separated list of PrepBufr report type values to
retain.
// An empty list indicates that all should be retained.
//
//
http://www.emc.ncep.noaa.gov/mmb/data_processing/prepbufr.doc/table_4.htm
//
// e.g. pb_report_type[] = [ 120, 133 ];
//
pb_report_type[] = [];

//
// Specify a comma-separated list of input report type values to retain.
// An empty list indicates that all should be retained.
//
//
http://www.emc.ncep.noaa.gov/mmb/data_processing/prepbufr.doc/table_6.htm
//
// e.g. in_report_type[] = [ 11, 22, 23 ];
//
in_report_type[] = [];

//
// Specify a comma-separated list of instrument type values to retain.
// An empty list indicates that all should be retained.
//
// e.g. instrument_type[] = [ 52, 87 ];
//
instrument_type[] = [];

//
// Beginning and ending vertical levels to retain.
//
beg_level = 1;
end_level = 255;
```

```
//
// Specify a comma-separated list of strings containing grib codes or
// corresponding grib code abbreviations to retain or be derived from
// the available observations.
//
// Grib Codes to be RETAINED:
//    SPFH or 51 for Specific Humidity in kg/kg
//    TMP  or 11 for Temperature in K
//    HGT  or 7  for Height in meters
//    UGRD or 33 for the East-West component of the wind in m/s
//    VGRD or 34 for the North-South component of the wind in m/s
//
// Grib Codes to be DERIVED:
//    DPT   or 17 for Dewpoint Temperature in K
//    WIND  or 32 for Wind Speed in m/s
//    RH    or 52 for Relative Humidity in %
//    MIXR  or 53 for Humidity Mixing Ratio in kg/kg
//    PRMSL or  2 for Pressure Reduced to Mean Sea Level in Pa
//
// http://www.nco.ncep.noaa.gov/pmb/docs/on388/table2.html
//
// e.g. obs_grib_code[] = [ "TMP", "UGRD", "VGRD", "WIND" ];
//
obs_grib_code[] = [ "TMP", "HGT", "UGRD", "VGRD", "DPT", "WIND", "RH",
"PRMSL" ];

//
// Quality mark threshold to indicate which observations to retain.
// Observations with a quality mark equal to or LESS THAN this threshold
// will be retained, while observations with a quality mark GREATER THAN
// this threshold will be discarded.
//
http://www.emc.ncep.noaa.gov/mmb/data_processing/prepbufr.doc/table_7.htm
//
quality_mark_thresh = 2;

//
// Flag to indicate whether observations should be drawn from the top
// of the event stack (most quality controlled) or the bottom of the
// event stack (most raw).  A value of 1 indicates that the top of the
// event stack should be used while a value of zero indicates that the
// bottom should be used.
//
event_stack_flag = 1;

//
// Space comma-separated list of data level categorie values to retain,
// where a value of:
//    0 = Surface level (mass reports only)
//    1 = Mandatory level (upper-air profile reports)
//    2 = Significant temperature level (upper-air profile reports)
//    2 = Significant temperature and winds-by-pressure level
//        (future combined mass and wind upper-air reports)
```

```
//    3 = Winds-by-pressure level (upper-air profile reports)
//    4 = Winds-by-height level (upper-air profile reports)
//    5 = Tropopause level (upper-air profile reports)
//    6 = Reports on a single level
//        (e.g., aircraft, satellite-wind, surface wind,
//         precipitable water retrievals, etc.)
//    7 = Auxiliary levels generated via interpolation from spanning
levels
//        (upper-air profile reports)
// An empty list indicates that all should be retained.
//
//
http://www.emc.ncep.noaa.gov/mmb/data_processing/prepbufr.doc/table_1.htm
//
// e.g. level_category[] = [ 0, 1 ];
//
level_category[] = [];

//
// Directory where temp files should be written by the PB2NC tool
//
tmp_dir = "/tmp";

//
// Indicate a version number for the contents of this configuration file.
// The value should generally not be modified.
//
version = "V2.0";
```

pb2nc_KSCd01_06_all.sh_template

```
#!/bin/sh
# Script Purpose: Perform PrepBUFR to netcdf conversion for KSC data.
# Script modified by John Raby
# Date: 12/29/2010
# Script Name: pb2nc_KSCd01_06_all.sh_template.
# Script Location: ~jraby/MET_obs/pbrun
# Calling Script: run_prepBUFR
# ---------------------------------------------------------------
echo
echo"***Running PB2NC on PrepBufr files***"
echo "***Files for use with WRF initialized at 06Z on Start_Date***"

mkdir ../ncobs/Start_Date

echo "hour 0"
pb2nc /PrepBUFR/Start_Date/ndas.t12z.prepbufr.tm06.nr
../ncobs/Start_Date/KSCd01_06_00_pb.nc ./PB2NCConfig_KSCd01_hr2 -v 2
echo "hour 1"
pb2nc /PrepBUFR/Start_Date/ndas.t12z.prepbufr.tm06.nr
../ncobs/Start_Date/KSCd01_06_01_pb.nc ./PB2NCConfig_KSCd01_hr3 -v 2
echo "hour 2"
pb2nc /PrepBUFR/Start_Date/ndas.t12z.prepbufr.tm03.nr
../ncobs/Start_Date/KSCd01_06_02_pb.nc ./PB2NCConfig_KSCd01_hr1 -v 2
echo "hour 3"
pb2nc /PrepBUFR/Start_Date/ndas.t12z.prepbufr.tm03.nr
../ncobs/Start_Date/KSCd01_06_03_pb.nc ./PB2NCConfig_KSCd01_hr2 -v 2
echo "hour 4"
pb2nc /PrepBUFR/Start_Date/ndas.t12z.prepbufr.tm03.nr
../ncobs/Start_Date/KSCd01_06_04_pb.nc ./PB2NCConfig_KSCd01_hr3 -v 2
echo "hour 5"
pb2nc /PrepBUFR/Start_Date/ndas.t18z.prepbufr.tm06.nr
../ncobs/Start_Date/KSCd01_06_05_pb.nc ./PB2NCConfig_KSCd01_hr1 -v 2
echo "hour 6"
pb2nc /PrepBUFR/Start_Date/ndas.t18z.prepbufr.tm06.nr
../ncobs/Start_Date/KSCd01_06_06_pb.nc ./PB2NCConfig_KSCd01_hr2 -v 2
echo "hour 7"
pb2nc /PrepBUFR/Start_Date/ndas.t18z.prepbufr.tm06.nr
../ncobs/Start_Date/KSCd01_06_07_pb.nc ./PB2NCConfig_KSCd01_hr3 -v 2
echo "hour 8"
pb2nc /PrepBUFR/Start_Date/ndas.t18z.prepbufr.tm03.nr
../ncobs/Start_Date/KSCd01_06_08_pb.nc ./PB2NCConfig_KSCd01_hr1 -v 2
echo "hour 9"
pb2nc /PrepBUFR/Start_Date/ndas.t18z.prepbufr.tm03.nr
../ncobs/Start_Date/KSCd01_06_09_pb.nc ./PB2NCConfig_KSCd01_hr2 -v 2
echo "hour 10"
pb2nc /PrepBUFR/Start_Date/ndas.t18z.prepbufr.tm03.nr
../ncobs/Start_Date/KSCd01_06_10_pb.nc ./PB2NCConfig_KSCd01_hr3 -v 2
echo "hour 11"
pb2nc /PrepBUFR/Stop_Date/ndas.t00z.prepbufr.tm06.nr
../ncobs/Start_Date/KSCd01_06_11_pb.nc ./PB2NCConfig_KSCd01_hr1 -v 2
echo "hour 12"
```

```
pb2nc /PrepBUFR/Stop_Date/ndas.t00z.prepbufr.tm06.nr
../ncobs/Start_Date/KSCd01_06_12_pb.nc ./PB2NCConfig_KSCd01_hr2 -v 2
echo "hour 13"
pb2nc /PrepBUFR/Stop_Date/ndas.t00z.prepbufr.tm06.nr
../ncobs/Start_Date/KSCd01_06_13_pb.nc ./PB2NCConfig_KSCd01_hr3 -v 2
echo "hour 14"
pb2nc /PrepBUFR/Stop_Date/ndas.t00z.prepbufr.tm03.nr
../ncobs/Start_Date/KSCd01_06_14_pb.nc ./PB2NCConfig_KSCd01_hr1 -v 2
echo "hour 15"
pb2nc /PrepBUFR/Stop_Date/ndas.t00z.prepbufr.tm03.nr
../ncobs/Start_Date/KSCd01_06_15_pb.nc ./PB2NCConfig_KSCd01_hr2 -v 2
echo "hour 16"
pb2nc /PrepBUFR/Stop_Date/ndas.t00z.prepbufr.tm03.nr
../ncobs/Start_Date/KSCd01_06_16_pb.nc ./PB2NCConfig_KSCd01_hr3 -v 2
echo "hour 17"
pb2nc /PrepBUFR/Stop_Date/ndas.t06z.prepbufr.tm06.nr
../ncobs/Start_Date/KSCd01_06_17_pb.nc ./PB2NCConfig_KSCd01_hr1 -v 2
echo "hour 18"
pb2nc /PrepBUFR/Stop_Date/ndas.t06z.prepbufr.tm06.nr
../ncobs/Start_Date/KSCd01_06_18_pb.nc ./PB2NCConfig_KSCd01_hr2 -v 2
echo "hour 19"
pb2nc /PrepBUFR/Stop_Date/ndas.t06z.prepbufr.tm06.nr
../ncobs/Start_Date/KSCd01_06_19_pb.nc ./PB2NCConfig_KSCd01_hr3 -v 2
echo "hour 20"
pb2nc /PrepBUFR/Stop_Date/ndas.t06z.prepbufr.tm03.nr
../ncobs/Start_Date/KSCd01_06_20_pb.nc ./PB2NCConfig_KSCd01_hr1 -v 2
echo "hour 21"
pb2nc /PrepBUFR/Stop_Date/ndas.t06z.prepbufr.tm03.nr
../ncobs/Start_Date/KSCd01_06_21_pb.nc ./PB2NCConfig_KSCd01_hr2 -v 2
echo "hour 22"
pb2nc /PrepBUFR/Stop_Date/ndas.t06z.prepbufr.tm03.nr
../ncobs/Start_Date/KSCd01_06_22_pb.nc ./PB2NCConfig_KSCd01_hr3 -v 2
echo "hour 23"
pb2nc /PrepBUFR/Stop_Date/ndas.t12z.prepbufr.tm06.nr
../ncobs/Start_Date/KSCd01_06_23_pb.nc ./PB2NCConfig_KSCd01_hr1 -v 2
echo "hour 24"
pb2nc /PrepBUFR/Stop_Date/ndas.t12z.prepbufr.tm06.nr
../ncobs/Start_Date/KSCd01_06_24_pb.nc ./PB2NCConfig_KSCd01_hr2 -v 2
```

pb2nc_KSCd01_06_all.sh

```
#!/bin/sh
# Script Purpose: Perform PrepBUFR to netcdf conversion for KSC data.
# Script modified by John Raby
# Date: 12/29/2010
# Script Name: pb2nc_KSCd01_06_all.sh.
# Script Location: ~jraby/MET_obs/pbrun
# Calling Script: run_prepBUFR
# -----------------------------------------------------------------
echo
echo"***Running PB2NC on PrepBufr files***"
echo "***Files for use with WRF initialized at 06Z on 20101025***"

mkdir ../ncobs/20101025

echo "hour 0"
pb2nc /PrepBUFR/20101025/ndas.t12z.prepbufr.tm06.nr
../ncobs/20101025/KSCd01_06_00_pb.nc ./PB2NCConfig_KSCd01_hr2 -v 2
echo "hour 1"
pb2nc /PrepBUFR/20101025/ndas.t12z.prepbufr.tm06.nr
../ncobs/20101025/KSCd01_06_01_pb.nc ./PB2NCConfig_KSCd01_hr3 -v 2
echo "hour 2"
pb2nc /PrepBUFR/20101025/ndas.t12z.prepbufr.tm03.nr
../ncobs/20101025/KSCd01_06_02_pb.nc ./PB2NCConfig_KSCd01_hr1 -v 2
echo "hour 3"
pb2nc /PrepBUFR/20101025/ndas.t12z.prepbufr.tm03.nr
../ncobs/20101025/KSCd01_06_03_pb.nc ./PB2NCConfig_KSCd01_hr2 -v 2
echo "hour 4"
pb2nc /PrepBUFR/20101025/ndas.t12z.prepbufr.tm03.nr
../ncobs/20101025/KSCd01_06_04_pb.nc ./PB2NCConfig_KSCd01_hr3 -v 2
echo "hour 5"
pb2nc /PrepBUFR/20101025/ndas.t18z.prepbufr.tm06.nr
../ncobs/20101025/KSCd01_06_05_pb.nc ./PB2NCConfig_KSCd01_hr1 -v 2
echo "hour 6"
pb2nc /PrepBUFR/20101025/ndas.t18z.prepbufr.tm06.nr
../ncobs/20101025/KSCd01_06_06_pb.nc ./PB2NCConfig_KSCd01_hr2 -v 2
echo "hour 7"
pb2nc /PrepBUFR/20101025/ndas.t18z.prepbufr.tm06.nr
../ncobs/20101025/KSCd01_06_07_pb.nc ./PB2NCConfig_KSCd01_hr3 -v 2
echo "hour 8"
pb2nc /PrepBUFR/20101025/ndas.t18z.prepbufr.tm03.nr
../ncobs/20101025/KSCd01_06_08_pb.nc ./PB2NCConfig_KSCd01_hr1 -v 2
echo "hour 9"
pb2nc /PrepBUFR/20101025/ndas.t18z.prepbufr.tm03.nr
../ncobs/20101025/KSCd01_06_09_pb.nc ./PB2NCConfig_KSCd01_hr2 -v 2
echo "hour 10"
pb2nc /PrepBUFR/20101025/ndas.t18z.prepbufr.tm03.nr
../ncobs/20101025/KSCd01_06_10_pb.nc ./PB2NCConfig_KSCd01_hr3 -v 2
echo "hour 11"
pb2nc /PrepBUFR/20101026/ndas.t00z.prepbufr.tm06.nr
../ncobs/20101025/KSCd01_06_11_pb.nc ./PB2NCConfig_KSCd01_hr1 -v 2
echo "hour 12"
```

```
pb2nc /PrepBUFR/20101026/ndas.t00z.prepbufr.tm06.nr
../ncobs/20101025/KSCd01_06_12_pb.nc ./PB2NCConfig_KSCd01_hr2 -v 2
echo "hour 13"
pb2nc /PrepBUFR/20101026/ndas.t00z.prepbufr.tm06.nr
../ncobs/20101025/KSCd01_06_13_pb.nc ./PB2NCConfig_KSCd01_hr3 -v 2
echo "hour 14"
pb2nc /PrepBUFR/20101026/ndas.t00z.prepbufr.tm03.nr
../ncobs/20101025/KSCd01_06_14_pb.nc ./PB2NCConfig_KSCd01_hr1 -v 2
echo "hour 15"
pb2nc /PrepBUFR/20101026/ndas.t00z.prepbufr.tm03.nr
../ncobs/20101025/KSCd01_06_15_pb.nc ./PB2NCConfig_KSCd01_hr2 -v 2
echo "hour 16"
pb2nc /PrepBUFR/20101026/ndas.t00z.prepbufr.tm03.nr
../ncobs/20101025/KSCd01_06_16_pb.nc ./PB2NCConfig_KSCd01_hr3 -v 2
echo "hour 17"
pb2nc /PrepBUFR/20101026/ndas.t06z.prepbufr.tm06.nr
../ncobs/20101025/KSCd01_06_17_pb.nc ./PB2NCConfig_KSCd01_hr1 -v 2
echo "hour 18"
pb2nc /PrepBUFR/20101026/ndas.t06z.prepbufr.tm06.nr
../ncobs/20101025/KSCd01_06_18_pb.nc ./PB2NCConfig_KSCd01_hr2 -v 2
echo "hour 19"
pb2nc /PrepBUFR/20101026/ndas.t06z.prepbufr.tm06.nr
../ncobs/20101025/KSCd01_06_19_pb.nc ./PB2NCConfig_KSCd01_hr3 -v 2
echo "hour 20"
pb2nc /PrepBUFR/20101026/ndas.t06z.prepbufr.tm03.nr
../ncobs/20101025/KSCd01_06_20_pb.nc ./PB2NCConfig_KSCd01_hr1 -v 2
echo "hour 21"
pb2nc /PrepBUFR/20101026/ndas.t06z.prepbufr.tm03.nr
../ncobs/20101025/KSCd01_06_21_pb.nc ./PB2NCConfig_KSCd01_hr2 -v 2
echo "hour 22"
pb2nc /PrepBUFR/20101026/ndas.t06z.prepbufr.tm03.nr
../ncobs/20101025/KSCd01_06_22_pb.nc ./PB2NCConfig_KSCd01_hr3 -v 2
echo "hour 23"
pb2nc /PrepBUFR/20101026/ndas.t12z.prepbufr.tm06.nr
../ncobs/20101025/KSCd01_06_23_pb.nc ./PB2NCConfig_KSCd01_hr1 -v 2
echo "hour 24"
pb2nc /PrepBUFR/20101026/ndas.t12z.prepbufr.tm06.nr
../ncobs/20101025/KSCd01_06_24_pb.nc ./PB2NCConfig_KSCd01_hr2 -v 2
```

PB2NCConfig_KSCd01_hr1

```
//////////////////////////////////////////////////////////////////////////
//////
//
// pb2nc configuration file for KSC domain 1, hour 1, 122910
:~jraby/MET_obs/pbrun/PB2NCConfig_KSCd01_hr1
//
//////////////////////////////////////////////////////////////////////////
//////

//
// Stratify the observation data in the PrepBufr files in the following
// ways:
//  (1) by message type: supply a list of PrepBufr message types
//      to retain (i.e. AIRCFT)
//  (2) by station id: supply a list of observation stations to retain
//  (3) by valid time: supply starting and ending times in form
//      YYYY-MM-DD HH:MM:SS UTC
//  (4) by location: supply either an NCEP masking grid, a masking
//      lat/lon polygon or a file to a mask lat/lon polygon
//  (5) by elevation: supply min/max elevation values
//  (6) by report type (typ): supply a list of report types to retain
//  (7) by instrument type (itp): supply a list of instrument type to
//      retain
//  (8) by vertical level: supply min/max vertical levels
//  (9) by variable type: supply a list of variable types to retain
//      P, Q, T, Z, U, V
// (11) by quality mark: supply a quality mark threshold
// (12) Flag to retain values for all quality marks, or just the first
//      quality mark (highest)
// (13) by data level category: supply a list of category types to
//      retain.
//
//      0 - Surface level (mass reports only)
//      1 - Mandatory level (upper-air profile reports)
//      2 - Significant temperature level (upper-air profile reports)
//      2 - Significant temperature and winds-by-pressure level
//          (future combined mass and wind upper-air reports)
//      3 - Winds-by-pressure level (upper-air profile reports)
//      4 - Winds-by-height level (upper-air profile reports)
//      5 - Tropopause level (upper-air profile reports)
//      6 - Reports on a single level
//          (e.g., aircraft, satellite-wind, surface wind,
//           precipitable water retrievals, etc.)
//      7 - Auxiliary levels generated via interpolation from spanning
levels
//          (upper-air profile reports)
//

//
// Specify a comma-separated list of PrepBufr message type strings to
retain.
// An empty list indicates that all should be retained.
```

```
// List of valid message types:
//    ADPUPA AIRCAR AIRCFT ADPSFC ERS1DA GOESND GPSIPW
//    MSONET PROFLR QKSWND RASSDA SATEMP SATWND SFCBOG
//    SFCSHP SPSSMI SYNDAT VADWND
//    ANYAIR (= AIRCAR, AIRCFT)
//    ANYSFC (= ADPSFC, SFCSHP, ADPUPA, PROFLR)
//    ONLYSF (= ADPSFC, SFCSHP)
//
http://www.emc.ncep.noaa.gov/mmb/data_processing/prepbufr.doc/table_1.htm
//
// e.g. message_type[] = [ "ADPUPA", "AIRCAR" ];
//
message_type[] = [ "ADPSFC", "ADPUPA", "ANYAIR" ];

//
// Specify a comma-separated list of station ID strings to retain.
// An empty list indicates that all should be retained.
//
// e.g. station_id[] = [ "KDEN" ];
//
station_id[] = [];

//
// Beginning and ending time offset values in seconds for observations
// to retain.  The valid time window for retaining observations is
// defined in reference to the observation time.  So observations with
// a valid time falling in the window [obs_time+beg_ds, obs_time+end_ds]
// will be retained.
//
beg_ds = -4500;
end_ds = -2700;

//
// Specify the name of a single grid to be used in masking the data.
// An empty string indicates that no grid should be used.  The standard
// NCEP grids are named "GNNN" where NNN indicates the three digit grid
number.
//
// http://www.nco.ncep.noaa.gov/pmb/docs/on388/tableb.html
//
// e.g. mask_grid = "G212";
//
mask_grid = "";

//
// Specify a single lat/lon polygon file to be used in masking the data
over
// which to perform scoring.  An empty string indicates that no polygon
mask
// should be used.
//
// Latitude values are given in degrees north and longitude values are
// given in degrees east.  By default, the first and last points are
// connected.
```

```
//
// The lat/lon polygon file should contain a name for the polygon followed
// by a space-separated list of lat/lon points defining the polygon:
//    "name lat1 lon1 lat2 lon2... latn lonn"
//
// MET_BASE may be used in the path for the lat/lon polygon file.
//
// e.g. mask_poly = "EAST.poly";
//
mask_poly = "KSCd01.poly";

//
// Beginning and ending elevation values in meters for observations
// to retain.
//
beg_elev = -1000;
end_elev = 100000;

//
// Specify a comma-separated list of PrepBufr report type values to
retain.
// An empty list indicates that all should be retained.
//
//
http://www.emc.ncep.noaa.gov/mmb/data_processing/prepbufr.doc/table_4.htm
//
// e.g. pb_report_type[] = [ 120, 133 ];
//
pb_report_type[] = [];

//
// Specify a comma-separated list of input report type values to retain.
// An empty list indicates that all should be retained.
//
//
http://www.emc.ncep.noaa.gov/mmb/data_processing/prepbufr.doc/table_6.htm
//
// e.g. in_report_type[] = [ 11, 22, 23 ];
//
in_report_type[] = [];

//
// Specify a comma-separated list of instrument type values to retain.
// An empty list indicates that all should be retained.
//
// e.g. instrument_type[] = [ 52, 87 ];
//
instrument_type[] = [];

//
// Beginning and ending vertical levels to retain.
//
beg_level = 1;
end_level = 255;
```

```
//
// Specify a comma-separated list of strings containing grib codes or
// corresponding grib code abbreviations to retain or be derived from
// the available observations.
//
// Grib Codes to be RETAINED:
//    SPFH or 51 for Specific Humidity in kg/kg
//    TMP  or 11 for Temperature in K
//    HGT  or 7  for Height in meters
//    UGRD or 33 for the East-West component of the wind in m/s
//    VGRD or 34 for the North-South component of the wind in m/s
//
// Grib Codes to be DERIVED:
//    DPT   or 17 for Dewpoint Temperature in K
//    WIND  or 32 for Wind Speed in m/s
//    RH    or 52 for Relative Humidity in %
//    MIXR  or 53 for Humidity Mixing Ratio in kg/kg
//    PRMSL or  2 for Pressure Reduced to Mean Sea Level in Pa
//
// http://www.nco.ncep.noaa.gov/pmb/docs/on388/table2.html
//
// e.g. obs_grib_code[] = [ "TMP", "UGRD", "VGRD", "WIND" ];
//
obs_grib_code[] = [ "TMP", "HGT", "UGRD", "VGRD", "DPT", "WIND", "RH",
"PRMSL" ];

//
// Quality mark threshold to indicate which observations to retain.
// Observations with a quality mark equal to or LESS THAN this threshold
// will be retained, while observations with a quality mark GREATER THAN
// this threshold will be discarded.
//
http://www.emc.ncep.noaa.gov/mmb/data_processing/prepbufr.doc/table_7.htm
//
quality_mark_thresh = 2;

//
// Flag to indicate whether observations should be drawn from the top
// of the event stack (most quality controlled) or the bottom of the
// event stack (most raw).  A value of 1 indicates that the top of the
// event stack should be used while a value of zero indicates that the
// bottom should be used.
//
event_stack_flag = 1;

//
// Space comma-separated list of data level categorie values to retain,
// where a value of:
//    0 = Surface level (mass reports only)
//    1 = Mandatory level (upper-air profile reports)
//    2 = Significant temperature level (upper-air profile reports)
//    2 = Significant temperature and winds-by-pressure level
//        (future combined mass and wind upper-air reports)
```

```
//    3 = Winds-by-pressure level (upper-air profile reports)
//    4 = Winds-by-height level (upper-air profile reports)
//    5 = Tropopause level (upper-air profile reports)
//    6 = Reports on a single level
//        (e.g., aircraft, satellite-wind, surface wind,
//         precipitable water retrievals, etc.)
//    7 = Auxiliary levels generated via interpolation from spanning
levels
//        (upper-air profile reports)
// An empty list indicates that all should be retained.
//
//
http://www.emc.ncep.noaa.gov/mmb/data_processing/prepbufr.doc/table_1.htm
//
// e.g. level_category[] = [ 0, 1 ];
//
level_category[] = [];

//
// Directory where temp files should be written by the PB2NC tool
//
tmp_dir = "/tmp";

//
// Indicate a version number for the contents of this configuration file.
// The value should generally not be modified.
//
version = "V2.0";
```

PB2NCConfig_KSCd01_hr2

```
////////////////////////////////////////////////////////////////////////////
//////
//
// pb2nc configuration file for KSC domain 1, hour2,
122910:~jraby/MET_obs/pbrun/PB2NCConfig_KSCd01_hr2
//
////////////////////////////////////////////////////////////////////////////
//////

//
// Stratify the observation data in the PrepBufr files in the following
// ways:
//  (1) by message type: supply a list of PrepBufr message types
//      to retain (i.e. AIRCFT)
//  (2) by station id: supply a list of observation stations to retain
//  (3) by valid time: supply starting and ending times in form
//      YYYY-MM-DD HH:MM:SS UTC
//  (4) by location: supply either an NCEP masking grid, a masking
//      lat/lon polygon or a file to a mask lat/lon polygon
//  (5) by elevation: supply min/max elevation values
//  (6) by report type (typ): supply a list of report types to retain
//  (7) by instrument type (itp): supply a list of instrument type to
//      retain
//  (8) by vertical level: supply min/max vertical levels
//  (9) by variable type: supply a list of variable types to retain
//      P, Q, T, Z, U, V
// (11) by quality mark: supply a quality mark threshold
// (12) Flag to retain values for all quality marks, or just the first
//      quality mark (highest)
// (13) by data level category: supply a list of category types to
//      retain.
//
//      0 - Surface level (mass reports only)
//      1 - Mandatory level (upper-air profile reports)
//      2 - Significant temperature level (upper-air profile reports)
//      2 - Significant temperature and winds-by-pressure level
//          (future combined mass and wind upper-air reports)
//      3 - Winds-by-pressure level (upper-air profile reports)
//      4 - Winds-by-height level (upper-air profile reports)
//      5 - Tropopause level (upper-air profile reports)
//      6 - Reports on a single level
//          (e.g., aircraft, satellite-wind, surface wind,
//           precipitable water retrievals, etc.)
//      7 - Auxiliary levels generated via interpolation from spanning
levels
//          (upper-air profile reports)
//

//
// Specify a comma-separated list of PrepBufr message type strings to
retain.
// An empty list indicates that all should be retained.
```

```
// List of valid message types:
//    ADPUPA AIRCAR AIRCFT ADPSFC ERS1DA GOESND GPSIPW
//    MSONET PROFLR QKSWND RASSDA SATEMP SATWND SFCBOG
//    SFCSHP SPSSMI SYNDAT VADWND
//    ANYAIR (= AIRCAR, AIRCFT)
//    ANYSFC (= ADPSFC, SFCSHP, ADPUPA, PROFLR)
//    ONLYSF (= ADPSFC, SFCSHP)
//
http://www.emc.ncep.noaa.gov/mmb/data_processing/prepbufr.doc/table_1.htm
//
// e.g. message_type[] = [ "ADPUPA", "AIRCAR" ];
//
message_type[] = [ "ADPSFC", "ADPUPA", "ANYAIR" ];

//
// Specify a comma-separated list of station ID strings to retain.
// An empty list indicates that all should be retained.
//
// e.g. station_id[] = [ "KDEN" ];
//
station_id[] = [];

//
// Beginning and ending time offset values in seconds for observations
// to retain.  The valid time window for retaining observations is
// defined in reference to the observation time.  So observations with
// a valid time falling in the window [obs_time+beg_ds, obs_time+end_ds]
// will be retained.
//
beg_ds = -900;
end_ds =  900;

//
// Specify the name of a single grid to be used in masking the data.
// An empty string indicates that no grid should be used.  The standard
// NCEP grids are named "GNNN" where NNN indicates the three digit grid
number.
//
// http://www.nco.ncep.noaa.gov/pmb/docs/on388/tableb.html
//
// e.g. mask_grid = "G212";
//
mask_grid = "";

//
// Specify a single lat/lon polygon file to be used in masking the data
over
// which to perform scoring.  An empty string indicates that no polygon
mask
// should be used.
//
// Latitude values are given in degrees north and longitude values are
// given in degrees east.  By default, the first and last points are
// connected.
```

```
//
// The lat/lon polygon file should contain a name for the polygon followed
// by a space-separated list of lat/lon points defining the polygon:
//    "name lat1 lon1 lat2 lon2... latn lonn"
//
// MET_BASE may be used in the path for the lat/lon polygon file.
//
// e.g. mask_poly = "EAST.poly";
//
mask_poly = "KSCd01.poly";

//
// Beginning and ending elevation values in meters for observations
// to retain.
//
beg_elev = -1000;
end_elev = 100000;

//
// Specify a comma-separated list of PrepBufr report type values to
retain.
// An empty list indicates that all should be retained.
//
//
http://www.emc.ncep.noaa.gov/mmb/data_processing/prepbufr.doc/table_4.htm
//
// e.g. pb_report_type[] = [ 120, 133 ];
//
pb_report_type[] = [];

//
// Specify a comma-separated list of input report type values to retain.
// An empty list indicates that all should be retained.
//
//
http://www.emc.ncep.noaa.gov/mmb/data_processing/prepbufr.doc/table_6.htm
//
// e.g. in_report_type[] = [ 11, 22, 23 ];
//
in_report_type[] = [];

//
// Specify a comma-separated list of instrument type values to retain.
// An empty list indicates that all should be retained.
//
// e.g. instrument_type[] = [ 52, 87 ];
//
instrument_type[] = [];

//
// Beginning and ending vertical levels to retain.
//
beg_level = 1;
end_level = 255;
```

```
//
// Specify a comma-separated list of strings containing grib codes or
// corresponding grib code abbreviations to retain or be derived from
// the available observations.
//
// Grib Codes to be RETAINED:
//    SPFH or 51 for Specific Humidity in kg/kg
//    TMP  or 11 for Temperature in K
//    HGT  or 7  for Height in meters
//    UGRD or 33 for the East-West component of the wind in m/s
//    VGRD or 34 for the North-South component of the wind in m/s
//
// Grib Codes to be DERIVED:
//    DPT   or 17 for Dewpoint Temperature in K
//    WIND  or 32 for Wind Speed in m/s
//    RH    or 52 for Relative Humidity in %
//    MIXR  or 53 for Humidity Mixing Ratio in kg/kg
//    PRMSL or  2 for Pressure Reduced to Mean Sea Level in Pa
//
// http://www.nco.ncep.noaa.gov/pmb/docs/on388/table2.html
//
// e.g. obs_grib_code[] = [ "TMP", "UGRD", "VGRD", "WIND" ];
//
obs_grib_code[] = [ "TMP", "HGT", "UGRD", "VGRD", "DPT", "WIND", "RH",
"PRMSL" ];

//
// Quality mark threshold to indicate which observations to retain.
// Observations with a quality mark equal to or LESS THAN this threshold
// will be retained, while observations with a quality mark GREATER THAN
// this threshold will be discarded.
//
http://www.emc.ncep.noaa.gov/mmb/data_processing/prepbufr.doc/table_7.htm
//
quality_mark_thresh = 2;

//
// Flag to indicate whether observations should be drawn from the top
// of the event stack (most quality controlled) or the bottom of the
// event stack (most raw).  A value of 1 indicates that the top of the
// event stack should be used while a value of zero indicates that the
// bottom should be used.
//
event_stack_flag = 1;

//
// Space comma-separated list of data level categorie values to retain,
// where a value of:
//    0 = Surface level (mass reports only)
//    1 = Mandatory level (upper-air profile reports)
//    2 = Significant temperature level (upper-air profile reports)
//    2 = Significant temperature and winds-by-pressure level
//        (future combined mass and wind upper-air reports)
```

```
//    3 = Winds-by-pressure level (upper-air profile reports)
//    4 = Winds-by-height level (upper-air profile reports)
//    5 = Tropopause level (upper-air profile reports)
//    6 = Reports on a single level
//        (e.g., aircraft, satellite-wind, surface wind,
//         precipitable water retrievals, etc.)
//    7 = Auxiliary levels generated via interpolation from spanning
levels
//        (upper-air profile reports)
// An empty list indicates that all should be retained.
//
//
http://www.emc.ncep.noaa.gov/mmb/data_processing/prepbufr.doc/table_1.htm
//
// e.g. level_category[] = [ 0, 1 ];
//
level_category[] = [];

//
// Directory where temp files should be written by the PB2NC tool
//
tmp_dir = "/tmp";

//
// Indicate a version number for the contents of this configuration file.
// The value should generally not be modified.
//
version = "V2.0";
```

PB2NCConfig_KSCd01_hr3

```
////////////////////////////////////////////////////////////////////////////
//////
//
// pb2nc configuration file for KSC domain 1, hour 3,
122910:~jraby/MET_obs/pbrun/PB2NCConfig_KSCd01_hr3
//
////////////////////////////////////////////////////////////////////////////
//////

//
// Stratify the observation data in the PrepBufr files in the following
// ways:
//  (1) by message type: supply a list of PrepBufr message types
//      to retain (i.e. AIRCFT)
//  (2) by station id: supply a list of observation stations to retain
//  (3) by valid time: supply starting and ending times in form
//      YYYY-MM-DD HH:MM:SS UTC
//  (4) by location: supply either an NCEP masking grid, a masking
//      lat/lon polygon or a file to a mask lat/lon polygon
//  (5) by elevation: supply min/max elevation values
//  (6) by report type (typ): supply a list of report types to retain
//  (7) by instrument type (itp): supply a list of instrument type to
//      retain
//  (8) by vertical level: supply min/max vertical levels
//  (9) by variable type: supply a list of variable types to retain
//      P, Q, T, Z, U, V
// (11) by quality mark: supply a quality mark threshold
// (12) Flag to retain values for all quality marks, or just the first
//      quality mark (highest)
// (13) by data level category: supply a list of category types to
//      retain.
//
//      0 - Surface level (mass reports only)
//      1 - Mandatory level (upper-air profile reports)
//      2 - Significant temperature level (upper-air profile reports)
//      2 - Significant temperature and winds-by-pressure level
//          (future combined mass and wind upper-air reports)
//      3 - Winds-by-pressure level (upper-air profile reports)
//      4 - Winds-by-height level (upper-air profile reports)
//      5 - Tropopause level (upper-air profile reports)
//      6 - Reports on a single level
//          (e.g., aircraft, satellite-wind, surface wind,
//           precipitable water retrievals, etc.)
//      7 - Auxiliary levels generated via interpolation from spanning
levels
//          (upper-air profile reports)
//

//
// Specify a comma-separated list of PrepBufr message type strings to
retain.
// An empty list indicates that all should be retained.
```

```
// List of valid message types:
//    ADPUPA AIRCAR AIRCFT ADPSFC ERS1DA GOESND GPSIPW
//    MSONET PROFLR QKSWND RASSDA SATEMP SATWND SFCBOG
//    SFCSHP SPSSMI SYNDAT VADWND
//    ANYAIR (= AIRCAR, AIRCFT)
//    ANYSFC (= ADPSFC, SFCSHP, ADPUPA, PROFLR)
//    ONLYSF (= ADPSFC, SFCSHP)
//
http://www.emc.ncep.noaa.gov/mmb/data_processing/prepbufr.doc/table_1.htm
//
// e.g. message_type[] = [ "ADPUPA", "AIRCAR" ];
//
message_type[] = [ "ADPSFC", "ADPUPA", "ANYAIR" ];

//
// Specify a comma-separated list of station ID strings to retain.
// An empty list indicates that all should be retained.
//
// e.g. station_id[] = [ "KDEN" ];
//
station_id[] = [];

//
// Beginning and ending time offset values in seconds for observations
// to retain.  The valid time window for retaining observations is
// defined in reference to the observation time.  So observations with
// a valid time falling in the window [obs_time+beg_ds, obs_time+end_ds]
// will be retained.
//
beg_ds =  2700;
end_ds =  4500;

//
// Specify the name of a single grid to be used in masking the data.
// An empty string indicates that no grid should be used.  The standard
// NCEP grids are named "GNNN" where NNN indicates the three digit grid
number.
//
// http://www.nco.ncep.noaa.gov/pmb/docs/on388/tableb.html
//
// e.g. mask_grid = "G212";
//
mask_grid = "";

//
// Specify a single lat/lon polygon file to be used in masking the data
over
// which to perform scoring.  An empty string indicates that no polygon
mask
// should be used.
//
// Latitude values are given in degrees north and longitude values are
// given in degrees east.  By default, the first and last points are
// connected.
```

```
//
// The lat/lon polygon file should contain a name for the polygon followed
// by a space-separated list of lat/lon points defining the polygon:
//    "name lat1 lon1 lat2 lon2... latn lonn"
//
// MET_BASE may be used in the path for the lat/lon polygon file.
//
// e.g. mask_poly = "EAST.poly";
//
mask_poly = "KSCd01.poly";

//
// Beginning and ending elevation values in meters for observations
// to retain.
//
beg_elev = -1000;
end_elev = 100000;

//
// Specify a comma-separated list of PrepBufr report type values to
retain.
// An empty list indicates that all should be retained.
//
//
http://www.emc.ncep.noaa.gov/mmb/data_processing/prepbufr.doc/table_4.htm
//
// e.g. pb_report_type[] = [ 120, 133 ];
//
pb_report_type[] = [];

//
// Specify a comma-separated list of input report type values to retain.
// An empty list indicates that all should be retained.
//
//
http://www.emc.ncep.noaa.gov/mmb/data_processing/prepbufr.doc/table_6.htm
//
// e.g. in_report_type[] = [ 11, 22, 23 ];
//
in_report_type[] = [];

//
// Specify a comma-separated list of instrument type values to retain.
// An empty list indicates that all should be retained.
//
// e.g. instrument_type[] = [ 52, 87 ];
//
instrument_type[] = [];

//
// Beginning and ending vertical levels to retain.
//
beg_level = 1;
end_level = 255;
```

```
//
// Specify a comma-separated list of strings containing grib codes or
// corresponding grib code abbreviations to retain or be derived from
// the available observations.
//
// Grib Codes to be RETAINED:
//    SPFH or 51 for Specific Humidity in kg/kg
//    TMP  or 11 for Temperature in K
//    HGT  or 7  for Height in meters
//    UGRD or 33 for the East-West component of the wind in m/s
//    VGRD or 34 for the North-South component of the wind in m/s
//
// Grib Codes to be DERIVED:
//    DPT   or 17 for Dewpoint Temperature in K
//    WIND  or 32 for Wind Speed in m/s
//    RH    or 52 for Relative Humidity in %
//    MIXR  or 53 for Humidity Mixing Ratio in kg/kg
//    PRMSL or  2 for Pressure Reduced to Mean Sea Level in Pa
//
// http://www.nco.ncep.noaa.gov/pmb/docs/on388/table2.html
//
// e.g. obs_grib_code[] = [ "TMP", "UGRD", "VGRD", "WIND" ];
//
obs_grib_code[] = [ "TMP", "HGT", "UGRD", "VGRD", "DPT", "WIND", "RH",
"PRMSL" ];

//
// Quality mark threshold to indicate which observations to retain.
// Observations with a quality mark equal to or LESS THAN this threshold
// will be retained, while observations with a quality mark GREATER THAN
// this threshold will be discarded.
//
http://www.emc.ncep.noaa.gov/mmb/data_processing/prepbufr.doc/table_7.htm
//
quality_mark_thresh = 2;

//
// Flag to indicate whether observations should be drawn from the top
// of the event stack (most quality controlled) or the bottom of the
// event stack (most raw).  A value of 1 indicates that the top of the
// event stack should be used while a value of zero indicates that the
// bottom should be used.
//
event_stack_flag = 1;

//
// Space comma-separated list of data level categorie values to retain,
// where a value of:
//    0 = Surface level (mass reports only)
//    1 = Mandatory level (upper-air profile reports)
//    2 = Significant temperature level (upper-air profile reports)
//    2 = Significant temperature and winds-by-pressure level
//        (future combined mass and wind upper-air reports)
```

```
//    3 = Winds-by-pressure level (upper-air profile reports)
//    4 = Winds-by-height level (upper-air profile reports)
//    5 = Tropopause level (upper-air profile reports)
//    6 = Reports on a single level
//        (e.g., aircraft, satellite-wind, surface wind,
//         precipitable water retrievals, etc.)
//    7 = Auxiliary levels generated via interpolation from spanning
levels
//        (upper-air profile reports)
// An empty list indicates that all should be retained.
//
//
http://www.emc.ncep.noaa.gov/mmb/data_processing/prepbufr.doc/table_1.htm
//
// e.g. level_category[] = [ 0, 1 ];
//
level_category[] = [];

//
// Directory where temp files should be written by the PB2NC tool
//
tmp_dir = "/tmp";

//
// Indicate a version number for the contents of this configuration file.
// The value should generally not be modified.
//
version = "V2.0";
```

pb2nc_KSCd02_06_all.sh_template

```
#!/bin/sh
# Script Purpose: Perform PrepBUFR to netcdf conversion for KSC data.
# Script modified by John Raby
# Date: 12/29/2010
# Script Name: pb2nc_KSCd02_06_all.sh_template.
# Script Location: ~jraby/MET_obs/pbrun.
# Calling Script: run_prepBUFR.
# --------------------------------------------------------------

echo
echo"***Running PB2NC on PrepBufr files***"
echo "***Files for use with WRF initialized at 06Z on Start_Date***"

mkdir ../ncobs/Start_Date

echo "hour 0"
pb2nc /opt3b/PrepBUFR/Start_Date/ndas.t12z.prepbufr.tm06.nr
../ncobs/Start_Date/KSCd02_06_00_pb.nc ./PB2NCConfig_KSCd02_hr2 -v 2
echo "hour 1"
pb2nc /opt3b/PrepBUFR/Start_Date/ndas.t12z.prepbufr.tm06.nr
../ncobs/Start_Date/KSCd02_06_01_pb.nc ./PB2NCConfig_KSCd02_hr3 -v 2
echo "hour 2"
pb2nc /opt3b/PrepBUFR/Start_Date/ndas.t12z.prepbufr.tm03.nr
../ncobs/Start_Date/KSCd02_06_02_pb.nc ./PB2NCConfig_KSCd02_hr1 -v 2
echo "hour 3"
pb2nc /opt3b/PrepBUFR/Start_Date/ndas.t12z.prepbufr.tm03.nr
../ncobs/Start_Date/KSCd02_06_03_pb.nc ./PB2NCConfig_KSCd02_hr2 -v 2
echo "hour 4"
pb2nc /opt3b/PrepBUFR/Start_Date/ndas.t12z.prepbufr.tm03.nr
../ncobs/Start_Date/KSCd02_06_04_pb.nc ./PB2NCConfig_KSCd02_hr3 -v 2
echo "hour 5"
pb2nc /opt3b/PrepBUFR/Start_Date/ndas.t18z.prepbufr.tm06.nr
../ncobs/Start_Date/KSCd02_06_05_pb.nc ./PB2NCConfig_KSCd02_hr1 -v 2
echo "hour 6"
pb2nc /opt3b/PrepBUFR/Start_Date/ndas.t18z.prepbufr.tm06.nr
../ncobs/Start_Date/KSCd02_06_06_pb.nc ./PB2NCConfig_KSCd02_hr2 -v 2
echo "hour 7"
pb2nc /opt3b/PrepBUFR/Start_Date/ndas.t18z.prepbufr.tm06.nr
../ncobs/Start_Date/KSCd02_06_07_pb.nc ./PB2NCConfig_KSCd02_hr3 -v 2
echo "hour 8"
pb2nc /opt3b/PrepBUFR/Start_Date/ndas.t18z.prepbufr.tm03.nr
../ncobs/Start_Date/KSCd02_06_08_pb.nc ./PB2NCConfig_KSCd02_hr1 -v 2
echo "hour 9"
pb2nc /opt3b/PrepBUFR/Start_Date/ndas.t18z.prepbufr.tm03.nr
../ncobs/Start_Date/KSCd02_06_09_pb.nc ./PB2NCConfig_KSCd02_hr2 -v 2
echo "hour 10"
pb2nc /opt3b/PrepBUFR/Start_Date/ndas.t18z.prepbufr.tm03.nr
../ncobs/Start_Date/KSCd02_06_10_pb.nc ./PB2NCConfig_KSCd02_hr3 -v 2
echo "hour 11"
pb2nc /opt3b/PrepBUFR/Stop_Date/ndas.t00z.prepbufr.tm06.nr
../ncobs/Start_Date/KSCd02_06_11_pb.nc ./PB2NCConfig_KSCd02_hr1 -v 2
echo "hour 12"
```

```
pb2nc /opt3b/PrepBUFR/Stop_Date/ndas.t00z.prepbufr.tm06.nr
../ncobs/Start_Date/KSCd02_06_12_pb.nc ./PB2NCConfig_KSCd02_hr2 -v 2
echo "hour 13"
pb2nc /opt3b/PrepBUFR/Stop_Date/ndas.t00z.prepbufr.tm06.nr
../ncobs/Start_Date/KSCd02_06_13_pb.nc ./PB2NCConfig_KSCd02_hr3 -v 2
echo "hour 14"
pb2nc /opt3b/PrepBUFR/Stop_Date/ndas.t00z.prepbufr.tm03.nr
../ncobs/Start_Date/KSCd02_06_14_pb.nc ./PB2NCConfig_KSCd02_hr1 -v 2
echo "hour 15"
pb2nc /opt3b/PrepBUFR/Stop_Date/ndas.t00z.prepbufr.tm03.nr
../ncobs/Start_Date/KSCd02_06_15_pb.nc ./PB2NCConfig_KSCd02_hr2 -v 2
echo "hour 16"
pb2nc /opt3b/PrepBUFR/Stop_Date/ndas.t00z.prepbufr.tm03.nr
../ncobs/Start_Date/KSCd02_06_16_pb.nc ./PB2NCConfig_KSCd02_hr3 -v 2
echo "hour 17"
pb2nc /opt3b/PrepBUFR/Stop_Date/ndas.t06z.prepbufr.tm06.nr
../ncobs/Start_Date/KSCd02_06_17_pb.nc ./PB2NCConfig_KSCd02_hr1 -v 2
echo "hour 18"
pb2nc /opt3b/PrepBUFR/Stop_Date/ndas.t06z.prepbufr.tm06.nr
../ncobs/Start_Date/KSCd02_06_18_pb.nc ./PB2NCConfig_KSCd02_hr2 -v 2
echo "hour 19"
pb2nc /opt3b/PrepBUFR/Stop_Date/ndas.t06z.prepbufr.tm06.nr
../ncobs/Start_Date/KSCd02_06_19_pb.nc ./PB2NCConfig_KSCd02_hr3 -v 2
echo "hour 20"
pb2nc /opt3b/PrepBUFR/Stop_Date/ndas.t06z.prepbufr.tm03.nr
../ncobs/Start_Date/KSCd02_06_20_pb.nc ./PB2NCConfig_KSCd02_hr1 -v 2
echo "hour 21"
pb2nc /opt3b/PrepBUFR/Stop_Date/ndas.t06z.prepbufr.tm03.nr
../ncobs/Start_Date/KSCd02_06_21_pb.nc ./PB2NCConfig_KSCd02_hr2 -v 2
echo "hour 22"
pb2nc /opt3b/PrepBUFR/Stop_Date/ndas.t06z.prepbufr.tm03.nr
../ncobs/Start_Date/KSCd02_06_22_pb.nc ./PB2NCConfig_KSCd02_hr3 -v 2
echo "hour 23"
pb2nc /opt3b/PrepBUFR/Stop_Date/ndas.t12z.prepbufr.tm06.nr
../ncobs/Start_Date/KSCd02_06_23_pb.nc ./PB2NCConfig_KSCd02_hr1 -v 2
echo "hour 24"
pb2nc /opt3b/PrepBUFR/Stop_Date/ndas.t12z.prepbufr.tm06.nr
../ncobs/Start_Date/KSCd02_06_24_pb.nc ./PB2NCConfig_KSCd02_hr2 -v 2
```

pb2nc_KSCd02_06_all.sh

```
#!/bin/sh
# Script Purpose: Perform PrepBUFR to netcdf conversion for KSC data.
# Script modified by John Raby
# Date: 12/29/2010
# Script Name: pb2nc_KSCd02_06_all.sh.
# Script Location: ~jraby/MET_obs/pbrun.
# Calling Script: run_prepBUFR.
# ---------------------------------------------------------------

echo
echo"***Running PB2NC on PrepBufr files***"
echo "***Files for use with WRF initialized at 06Z on 20101025***"

mkdir ../ncobs/20101025

echo "hour 0"
pb2nc /opt3b/PrepBUFR/20101025/ndas.t12z.prepbufr.tm06.nr
../ncobs/20101025/KSCd02_06_00_pb.nc ./PB2NCConfig_KSCd02_hr2 -v 2
echo "hour 1"
pb2nc /opt3b/PrepBUFR/20101025/ndas.t12z.prepbufr.tm06.nr
../ncobs/20101025/KSCd02_06_01_pb.nc ./PB2NCConfig_KSCd02_hr3 -v 2
echo "hour 2"
pb2nc /opt3b/PrepBUFR/20101025/ndas.t12z.prepbufr.tm03.nr
../ncobs/20101025/KSCd02_06_02_pb.nc ./PB2NCConfig_KSCd02_hr1 -v 2
echo "hour 3"
pb2nc /opt3b/PrepBUFR/20101025/ndas.t12z.prepbufr.tm03.nr
../ncobs/20101025/KSCd02_06_03_pb.nc ./PB2NCConfig_KSCd02_hr2 -v 2
echo "hour 4"
pb2nc /opt3b/PrepBUFR/20101025/ndas.t12z.prepbufr.tm03.nr
../ncobs/20101025/KSCd02_06_04_pb.nc ./PB2NCConfig_KSCd02_hr3 -v 2
echo "hour 5"
pb2nc /opt3b/PrepBUFR/20101025/ndas.t18z.prepbufr.tm06.nr
../ncobs/20101025/KSCd02_06_05_pb.nc ./PB2NCConfig_KSCd02_hr1 -v 2
echo "hour 6"
pb2nc /opt3b/PrepBUFR/20101025/ndas.t18z.prepbufr.tm06.nr
../ncobs/20101025/KSCd02_06_06_pb.nc ./PB2NCConfig_KSCd02_hr2 -v 2
echo "hour 7"
pb2nc /opt3b/PrepBUFR/20101025/ndas.t18z.prepbufr.tm06.nr
../ncobs/20101025/KSCd02_06_07_pb.nc ./PB2NCConfig_KSCd02_hr3 -v 2
echo "hour 8"
pb2nc /opt3b/PrepBUFR/20101025/ndas.t18z.prepbufr.tm03.nr
../ncobs/20101025/KSCd02_06_08_pb.nc ./PB2NCConfig_KSCd02_hr1 -v 2
echo "hour 9"
pb2nc /opt3b/PrepBUFR/20101025/ndas.t18z.prepbufr.tm03.nr
../ncobs/20101025/KSCd02_06_09_pb.nc ./PB2NCConfig_KSCd02_hr2 -v 2
echo "hour 10"
pb2nc /opt3b/PrepBUFR/20101025/ndas.t18z.prepbufr.tm03.nr
../ncobs/20101025/KSCd02_06_10_pb.nc ./PB2NCConfig_KSCd02_hr3 -v 2
echo "hour 11"
pb2nc /opt3b/PrepBUFR/20101026/ndas.t00z.prepbufr.tm06.nr
../ncobs/20101025/KSCd02_06_11_pb.nc ./PB2NCConfig_KSCd02_hr1 -v 2
echo "hour 12"
```

```
pb2nc /opt3b/PrepBUFR/20101026/ndas.t00z.prepbufr.tm06.nr
../ncobs/20101025/KSCd02_06_12_pb.nc ./PB2NCConfig_KSCd02_hr2 -v 2
echo "hour 13"
pb2nc /opt3b/PrepBUFR/20101026/ndas.t00z.prepbufr.tm06.nr
../ncobs/20101025/KSCd02_06_13_pb.nc ./PB2NCConfig_KSCd02_hr3 -v 2
echo "hour 14"
pb2nc /opt3b/PrepBUFR/20101026/ndas.t00z.prepbufr.tm03.nr
../ncobs/20101025/KSCd02_06_14_pb.nc ./PB2NCConfig_KSCd02_hr1 -v 2
echo "hour 15"
pb2nc /opt3b/PrepBUFR/20101026/ndas.t00z.prepbufr.tm03.nr
../ncobs/20101025/KSCd02_06_15_pb.nc ./PB2NCConfig_KSCd02_hr2 -v 2
echo "hour 16"
pb2nc /opt3b/PrepBUFR/20101026/ndas.t00z.prepbufr.tm03.nr
../ncobs/20101025/KSCd02_06_16_pb.nc ./PB2NCConfig_KSCd02_hr3 -v 2
echo "hour 17"
pb2nc /opt3b/PrepBUFR/20101026/ndas.t06z.prepbufr.tm06.nr
../ncobs/20101025/KSCd02_06_17_pb.nc ./PB2NCConfig_KSCd02_hr1 -v 2
echo "hour 18"
pb2nc /opt3b/PrepBUFR/20101026/ndas.t06z.prepbufr.tm06.nr
../ncobs/20101025/KSCd02_06_18_pb.nc ./PB2NCConfig_KSCd02_hr2 -v 2
echo "hour 19"
pb2nc /opt3b/PrepBUFR/20101026/ndas.t06z.prepbufr.tm06.nr
../ncobs/20101025/KSCd02_06_19_pb.nc ./PB2NCConfig_KSCd02_hr3 -v 2
echo "hour 20"
pb2nc /opt3b/PrepBUFR/20101026/ndas.t06z.prepbufr.tm03.nr
../ncobs/20101025/KSCd02_06_20_pb.nc ./PB2NCConfig_KSCd02_hr1 -v 2
echo "hour 21"
pb2nc /opt3b/PrepBUFR/20101026/ndas.t06z.prepbufr.tm03.nr
../ncobs/20101025/KSCd02_06_21_pb.nc ./PB2NCConfig_KSCd02_hr2 -v 2
echo "hour 22"
pb2nc /opt3b/PrepBUFR/20101026/ndas.t06z.prepbufr.tm03.nr
../ncobs/20101025/KSCd02_06_22_pb.nc ./PB2NCConfig_KSCd02_hr3 -v 2
echo "hour 23"
pb2nc /opt3b/PrepBUFR/20101026/ndas.t12z.prepbufr.tm06.nr
../ncobs/20101025/KSCd02_06_23_pb.nc ./PB2NCConfig_KSCd02_hr1 -v 2
echo "hour 24"
pb2nc /opt3b/PrepBUFR/20101026/ndas.t12z.prepbufr.tm06.nr
../ncobs/20101025/KSCd02_06_24_pb.nc ./PB2NCConfig_KSCd02_hr2 -v 2
```

PB2NCConfig_KSCd02_hr1

```
////////////////////////////////////////////////////////////////////////////
//////
//
// pb2nc configuration file for KSC, domain 2, hour 1,
122910:~jraby/MET_obs/pbrun/PB2NCConfig_KSCd02_hr1
//
////////////////////////////////////////////////////////////////////////////
//////

//
// Stratify the observation data in the PrepBufr files in the following
// ways:
//  (1) by message type: supply a list of PrepBufr message types
//      to retain (i.e. AIRCFT)
//  (2) by station id: supply a list of observation stations to retain
//  (3) by valid time: supply starting and ending times in form
//      YYYY-MM-DD HH:MM:SS UTC
//  (4) by location: supply either an NCEP masking grid, a masking
//      lat/lon polygon or a file to a mask lat/lon polygon
//  (5) by elevation: supply min/max elevation values
//  (6) by report type (typ): supply a list of report types to retain
//  (7) by instrument type (itp): supply a list of instrument type to
//      retain
//  (8) by vertical level: supply min/max vertical levels
//  (9) by variable type: supply a list of variable types to retain
//      P, Q, T, Z, U, V
// (11) by quality mark: supply a quality mark threshold
// (12) Flag to retain values for all quality marks, or just the first
//      quality mark (highest)
// (13) by data level category: supply a list of category types to
//      retain.
//
//      0 - Surface level (mass reports only)
//      1 - Mandatory level (upper-air profile reports)
//      2 - Significant temperature level (upper-air profile reports)
//      2 - Significant temperature and winds-by-pressure level
//          (future combined mass and wind upper-air reports)
//      3 - Winds-by-pressure level (upper-air profile reports)
//      4 - Winds-by-height level (upper-air profile reports)
//      5 - Tropopause level (upper-air profile reports)
//      6 - Reports on a single level
//          (e.g., aircraft, satellite-wind, surface wind,
//           precipitable water retrievals, etc.)
//      7 - Auxiliary levels generated via interpolation from spanning
levels
//          (upper-air profile reports)
//

//
// Specify a comma-separated list of PrepBufr message type strings to
retain.
// An empty list indicates that all should be retained.
```

```
// List of valid message types:
//    ADPUPA AIRCAR AIRCFT ADPSFC ERS1DA GOESND GPSIPW
//    MSONET PROFLR QKSWND RASSDA SATEMP SATWND SFCBOG
//    SFCSHP SPSSMI SYNDAT VADWND
//    ANYAIR (= AIRCAR, AIRCFT)
//    ANYSFC (= ADPSFC, SFCSHP, ADPUPA, PROFLR)
//    ONLYSF (= ADPSFC, SFCSHP)
//
http://www.emc.ncep.noaa.gov/mmb/data_processing/prepbufr.doc/table_1.htm
//
// e.g. message_type[] = [ "ADPUPA", "AIRCAR" ];
//
message_type[] = ["ADPSFC", "ADPUPA", "ANYAIR"];

//
// Specify a comma-separated list of station ID strings to retain.
// An empty list indicates that all should be retained.
//
// e.g. station_id[] = [ "KDEN" ];
//
station_id[] = [];

//
// Beginning and ending time offset values in seconds for observations
// to retain.  The valid time window for retaining observations is
// defined in reference to the observation time.  So observations with
// a valid time falling in the window [obs_time+beg_ds, obs_time+end_ds]
// will be retained.
//
beg_ds = -4500;
end_ds = -2700;

//
// Specify the name of a single grid to be used in masking the data.
// An empty string indicates that no grid should be used.  The standard
// NCEP grids are named "GNNN" where NNN indicates the three digit grid
number.
//
// http://www.nco.ncep.noaa.gov/pmb/docs/on388/tableb.html
//
// e.g. mask_grid = "G212";
//
mask_grid = "";

//
// Specify a single lat/lon polygon file to be used in masking the data
over
// which to perform scoring.  An empty string indicates that no polygon
mask
// should be used.
//
// Latitude values are given in degrees north and longitude values are
// given in degrees east.  By default, the first and last points are
// connected.
```

```
//
// The lat/lon polygon file should contain a name for the polygon followed
// by a space-separated list of lat/lon points defining the polygon:
//    "name lat1 lon1 lat2 lon2... latn lonn"
//
// MET_BASE may be used in the path for the lat/lon polygon file.
//
// e.g. mask_poly = "EAST.poly";
//
mask_poly = "KSCd02.poly";

//
// Beginning and ending elevation values in meters for observations
// to retain.
//
beg_elev = -1000;
end_elev = 100000;

//
// Specify a comma-separated list of PrepBufr report type values to
retain.
// An empty list indicates that all should be retained.
//
//
http://www.emc.ncep.noaa.gov/mmb/data_processing/prepbufr.doc/table_4.htm
//
// e.g. pb_report_type[] = [ 120, 133 ];
//
pb_report_type[] = [];

//
// Specify a comma-separated list of input report type values to retain.
// An empty list indicates that all should be retained.
//
//
http://www.emc.ncep.noaa.gov/mmb/data_processing/prepbufr.doc/table_6.htm
//
// e.g. in_report_type[] = [ 11, 22, 23 ];
//
in_report_type[] = [];

//
// Specify a comma-separated list of instrument type values to retain.
// An empty list indicates that all should be retained.
//
// e.g. instrument_type[] = [ 52, 87 ];
//
instrument_type[] = [];

//
// Beginning and ending vertical levels to retain.
//
beg_level = 1;
end_level = 255;
```

```
//
// Specify a comma-separated list of strings containing grib codes or
// corresponding grib code abbreviations to retain or be derived from
// the available observations.
//
// Grib Codes to be RETAINED:
//    SPFH or 51 for Specific Humidity in kg/kg
//    TMP  or 11 for Temperature in K
//    HGT  or 7  for Height in meters
//    UGRD or 33 for the East-West component of the wind in m/s
//    VGRD or 34 for the North-South component of the wind in m/s
//
// Grib Codes to be DERIVED:
//    DPT   or 17 for Dewpoint Temperature in K
//    WIND  or 32 for Wind Speed in m/s
//    RH    or 52 for Relative Humidity in %
//    MIXR  or 53 for Humidity Mixing Ratio in kg/kg
//    PRMSL or  2 for Pressure Reduced to Mean Sea Level in Pa
//
// http://www.nco.ncep.noaa.gov/pmb/docs/on388/table2.html
//
// e.g. obs_grib_code[] = [ "TMP", "UGRD", "VGRD", "WIND" ];
//
obs_grib_code[] = [ "TMP", "HGT", "UGRD", "VGRD", "DPT", "WIND", "RH",
"PRMSL" ];

//
// Quality mark threshold to indicate which observations to retain.
// Observations with a quality mark equal to or LESS THAN this threshold
// will be retained, while observations with a quality mark GREATER THAN
// this threshold will be discarded.
//
http://www.emc.ncep.noaa.gov/mmb/data_processing/prepbufr.doc/table_7.htm
//
quality_mark_thresh = 2;

//
// Flag to indicate whether observations should be drawn from the top
// of the event stack (most quality controlled) or the bottom of the
// event stack (most raw).  A value of 1 indicates that the top of the
// event stack should be used while a value of zero indicates that the
// bottom should be used.
//
event_stack_flag = 1;

//
// Space comma-separated list of data level categorie values to retain,
// where a value of:
//    0 = Surface level (mass reports only)
//    1 = Mandatory level (upper-air profile reports)
//    2 = Significant temperature level (upper-air profile reports)
//    2 = Significant temperature and winds-by-pressure level
//        (future combined mass and wind upper-air reports)
```

```
//    3 = Winds-by-pressure level (upper-air profile reports)
//    4 = Winds-by-height level (upper-air profile reports)
//    5 = Tropopause level (upper-air profile reports)
//    6 = Reports on a single level
//        (e.g., aircraft, satellite-wind, surface wind,
//         precipitable water retrievals, etc.)
//    7 = Auxiliary levels generated via interpolation from spanning
levels
//        (upper-air profile reports)
// An empty list indicates that all should be retained.
//
//
http://www.emc.ncep.noaa.gov/mmb/data_processing/prepbufr.doc/table_1.htm
//
// e.g. level_category[] = [ 0, 1 ];
//
level_category[] = [];

//
// Directory where temp files should be written by the PB2NC tool
//
tmp_dir = "/tmp";

//
// Indicate a version number for the contents of this configuration file.
// The value should generally not be modified.
//
version = "V2.0";
```

PB2NCConfig_KSCd02_hr2

```
////////////////////////////////////////////////////////////////////////////
//////
//
// pb2nc configuration file for KSC domain 2, hour 2,
122910:~jraby/MET_obs/pbrun/PB2NCConfig_KSCd02_hr2
//
////////////////////////////////////////////////////////////////////////////
//////

//
// Stratify the observation data in the PrepBufr files in the following
// ways:
//  (1) by message type: supply a list of PrepBufr message types
//      to retain (i.e. AIRCFT)
//  (2) by station id: supply a list of observation stations to retain
//  (3) by valid time: supply starting and ending times in form
//      YYYY-MM-DD HH:MM:SS UTC
//  (4) by location: supply either an NCEP masking grid, a masking
//      lat/lon polygon or a file to a mask lat/lon polygon
//  (5) by elevation: supply min/max elevation values
//  (6) by report type (typ): supply a list of report types to retain
//  (7) by instrument type (itp): supply a list of instrument type to
//      retain
//  (8) by vertical level: supply min/max vertical levels
//  (9) by variable type: supply a list of variable types to retain
//      P, Q, T, Z, U, V
// (11) by quality mark: supply a quality mark threshold
// (12) Flag to retain values for all quality marks, or just the first
//      quality mark (highest)
// (13) by data level category: supply a list of category types to
//      retain.
//
//      0 - Surface level (mass reports only)
//      1 - Mandatory level (upper-air profile reports)
//      2 - Significant temperature level (upper-air profile reports)
//      2 - Significant temperature and winds-by-pressure level
//          (future combined mass and wind upper-air reports)
//      3 - Winds-by-pressure level (upper-air profile reports)
//      4 - Winds-by-height level (upper-air profile reports)
//      5 - Tropopause level (upper-air profile reports)
//      6 - Reports on a single level
//          (e.g., aircraft, satellite-wind, surface wind,
//           precipitable water retrievals, etc.)
//      7 - Auxiliary levels generated via interpolation from spanning
levels
//          (upper-air profile reports)
//

//
// Specify a comma-separated list of PrepBufr message type strings to
retain.
// An empty list indicates that all should be retained.
```

```
// List of valid message types:
//    ADPUPA AIRCAR AIRCFT ADPSFC ERS1DA GOESND GPSIPW
//    MSONET PROFLR QKSWND RASSDA SATEMP SATWND SFCBOG
//    SFCSHP SPSSMI SYNDAT VADWND
//    ANYAIR (= AIRCAR, AIRCFT)
//    ANYSFC (= ADPSFC, SFCSHP, ADPUPA, PROFLR)
//    ONLYSF (= ADPSFC, SFCSHP)
//
http://www.emc.ncep.noaa.gov/mmb/data_processing/prepbufr.doc/table_1.htm
//
// e.g. message_type[] = [ "ADPUPA", "AIRCAR" ];
//
message_type[] = ["ADPSFC", "ADPUPA", "ANYAIR"];

//
// Specify a comma-separated list of station ID strings to retain.
// An empty list indicates that all should be retained.
//
// e.g. station_id[] = [ "KDEN" ];
//
station_id[] = [];

//
// Beginning and ending time offset values in seconds for observations
// to retain.  The valid time window for retaining observations is
// defined in reference to the observation time.  So observations with
// a valid time falling in the window [obs_time+beg_ds, obs_time+end_ds]
// will be retained.
//
beg_ds = -900;
end_ds =  900;

//
// Specify the name of a single grid to be used in masking the data.
// An empty string indicates that no grid should be used.  The standard
// NCEP grids are named "GNNN" where NNN indicates the three digit grid
number.
//
// http://www.nco.ncep.noaa.gov/pmb/docs/on388/tableb.html
//
// e.g. mask_grid = "G212";
//
mask_grid = "";

//
// Specify a single lat/lon polygon file to be used in masking the data
over
// which to perform scoring.  An empty string indicates that no polygon
mask
// should be used.
//
// Latitude values are given in degrees north and longitude values are
// given in degrees east.  By default, the first and last points are
// connected.
```

```
//
// The lat/lon polygon file should contain a name for the polygon followed
// by a space-separated list of lat/lon points defining the polygon:
//    "name lat1 lon1 lat2 lon2... latn lonn"
//
// MET_BASE may be used in the path for the lat/lon polygon file.
//
// e.g. mask_poly = "EAST.poly";
//
mask_poly = "KSCd02.poly";

//
// Beginning and ending elevation values in meters for observations
// to retain.
//
beg_elev = -1000;
end_elev = 100000;

//
// Specify a comma-separated list of PrepBufr report type values to
retain.
// An empty list indicates that all should be retained.
//
//
http://www.emc.ncep.noaa.gov/mmb/data_processing/prepbufr.doc/table_4.htm
//
// e.g. pb_report_type[] = [ 120, 133 ];
//
pb_report_type[] = [];

//
// Specify a comma-separated list of input report type values to retain.
// An empty list indicates that all should be retained.
//
//
http://www.emc.ncep.noaa.gov/mmb/data_processing/prepbufr.doc/table_6.htm
//
// e.g. in_report_type[] = [ 11, 22, 23 ];
//
in_report_type[] = [];

//
// Specify a comma-separated list of instrument type values to retain.
// An empty list indicates that all should be retained.
//
// e.g. instrument_type[] = [ 52, 87 ];
//
instrument_type[] = [];

//
// Beginning and ending vertical levels to retain.
//
beg_level = 1;
end_level = 255;
```

```
//
// Specify a comma-separated list of strings containing grib codes or
// corresponding grib code abbreviations to retain or be derived from
// the available observations.
//
// Grib Codes to be RETAINED:
//    SPFH or 51 for Specific Humidity in kg/kg
//    TMP  or 11 for Temperature in K
//    HGT  or 7  for Height in meters
//    UGRD or 33 for the East-West component of the wind in m/s
//    VGRD or 34 for the North-South component of the wind in m/s
//
// Grib Codes to be DERIVED:
//    DPT   or 17 for Dewpoint Temperature in K
//    WIND  or 32 for Wind Speed in m/s
//    RH    or 52 for Relative Humidity in %
//    MIXR  or 53 for Humidity Mixing Ratio in kg/kg
//    PRMSL or  2 for Pressure Reduced to Mean Sea Level in Pa
//
// http://www.nco.ncep.noaa.gov/pmb/docs/on388/table2.html
//
// e.g. obs_grib_code[] = [ "TMP", "UGRD", "VGRD", "WIND" ];
//
obs_grib_code[] = [ "TMP", "HGT", "UGRD", "VGRD", "DPT", "WIND", "RH",
"PRMSL" ];

//
// Quality mark threshold to indicate which observations to retain.
// Observations with a quality mark equal to or LESS THAN this threshold
// will be retained, while observations with a quality mark GREATER THAN
// this threshold will be discarded.
//
http://www.emc.ncep.noaa.gov/mmb/data_processing/prepbufr.doc/table_7.htm
//
quality_mark_thresh = 2;

//
// Flag to indicate whether observations should be drawn from the top
// of the event stack (most quality controlled) or the bottom of the
// event stack (most raw).  A value of 1 indicates that the top of the
// event stack should be used while a value of zero indicates that the
// bottom should be used.
//
event_stack_flag = 1;

//
// Space comma-separated list of data level categorie values to retain,
// where a value of:
//    0 = Surface level (mass reports only)
//    1 = Mandatory level (upper-air profile reports)
//    2 = Significant temperature level (upper-air profile reports)
//    2 = Significant temperature and winds-by-pressure level
//        (future combined mass and wind upper-air reports)
```

```
//    3 = Winds-by-pressure level (upper-air profile reports)
//    4 = Winds-by-height level (upper-air profile reports)
//    5 = Tropopause level (upper-air profile reports)
//    6 = Reports on a single level
//        (e.g., aircraft, satellite-wind, surface wind,
//         precipitable water retrievals, etc.)
//    7 = Auxiliary levels generated via interpolation from spanning
levels
//        (upper-air profile reports)
// An empty list indicates that all should be retained.
//
//
http://www.emc.ncep.noaa.gov/mmb/data_processing/prepbufr.doc/table_1.htm
//
// e.g. level_category[] = [ 0, 1 ];
//
level_category[] = [];

//
// Directory where temp files should be written by the PB2NC tool
//
tmp_dir = "/tmp";

//
// Indicate a version number for the contents of this configuration file.
// The value should generally not be modified.
//
version = "V2.0";
```

PB2NCConfig_KSCd02_hr3

```
////////////////////////////////////////////////////////////////////////////
//////
//
// pb2nc configuration file for KSC,domain 2, hour 3,
122910:~jraby/MET_obs/pbrun/PB2NCConfig_KSCd02_hr3
//
////////////////////////////////////////////////////////////////////////////
//////

//
// Stratify the observation data in the PrepBufr files in the following
// ways:
//  (1) by message type: supply a list of PrepBufr message types
//      to retain (i.e. AIRCFT)
//  (2) by station id: supply a list of observation stations to retain
//  (3) by valid time: supply starting and ending times in form
//      YYYY-MM-DD HH:MM:SS UTC
//  (4) by location: supply either an NCEP masking grid, a masking
//      lat/lon polygon or a file to a mask lat/lon polygon
//  (5) by elevation: supply min/max elevation values
//  (6) by report type (typ): supply a list of report types to retain
//  (7) by instrument type (itp): supply a list of instrument type to
//      retain
//  (8) by vertical level: supply min/max vertical levels
//  (9) by variable type: supply a list of variable types to retain
//      P, Q, T, Z, U, V
// (11) by quality mark: supply a quality mark threshold
// (12) Flag to retain values for all quality marks, or just the first
//      quality mark (highest)
// (13) by data level category: supply a list of category types to
//      retain.
//
//      0 - Surface level (mass reports only)
//      1 - Mandatory level (upper-air profile reports)
//      2 - Significant temperature level (upper-air profile reports)
//      2 - Significant temperature and winds-by-pressure level
//          (future combined mass and wind upper-air reports)
//      3 - Winds-by-pressure level (upper-air profile reports)
//      4 - Winds-by-height level (upper-air profile reports)
//      5 - Tropopause level (upper-air profile reports)
//      6 - Reports on a single level
//          (e.g., aircraft, satellite-wind, surface wind,
//           precipitable water retrievals, etc.)
//      7 - Auxiliary levels generated via interpolation from spanning
levels
//          (upper-air profile reports)
//

//
// Specify a comma-separated list of PrepBufr message type strings to
retain.
// An empty list indicates that all should be retained.
```

```
// List of valid message types:
//    ADPUPA AIRCAR AIRCFT ADPSFC ERS1DA GOESND GPSIPW
//    MSONET PROFLR QKSWND RASSDA SATEMP SATWND SFCBOG
//    SFCSHP SPSSMI SYNDAT VADWND
//    ANYAIR (= AIRCAR, AIRCFT)
//    ANYSFC (= ADPSFC, SFCSHP, ADPUPA, PROFLR)
//    ONLYSF (= ADPSFC, SFCSHP)
//
http://www.emc.ncep.noaa.gov/mmb/data_processing/prepbufr.doc/table_1.htm
//
// e.g. message_type[] = [ "ADPUPA", "AIRCAR" ];
//
message_type[] = ["ADPSFC", "ADPUPA", "ANYAIR"];

//
// Specify a comma-separated list of station ID strings to retain.
// An empty list indicates that all should be retained.
//
// e.g. station_id[] = [ "KDEN" ];
//
station_id[] = [];

//
// Beginning and ending time offset values in seconds for observations
// to retain.  The valid time window for retaining observations is
// defined in reference to the observation time.  So observations with
// a valid time falling in the window [obs_time+beg_ds, obs_time+end_ds]
// will be retained.
//
beg_ds =  2700;
end_ds =  4500;

//
// Specify the name of a single grid to be used in masking the data.
// An empty string indicates that no grid should be used.  The standard
// NCEP grids are named "GNNN" where NNN indicates the three digit grid
number.
//
// http://www.nco.ncep.noaa.gov/pmb/docs/on388/tableb.html
//
// e.g. mask_grid = "G212";
//
mask_grid = "";

//
// Specify a single lat/lon polygon file to be used in masking the data
over
// which to perform scoring.  An empty string indicates that no polygon
mask
// should be used.
//
// Latitude values are given in degrees north and longitude values are
// given in degrees east.  By default, the first and last points are
// connected.
```

```
//
// The lat/lon polygon file should contain a name for the polygon followed
// by a space-separated list of lat/lon points defining the polygon:
//    "name lat1 lon1 lat2 lon2... latn lonn"
//
// MET_BASE may be used in the path for the lat/lon polygon file.
//
// e.g. mask_poly = "EAST.poly";
//
mask_poly = "KSCd02.poly";

//
// Beginning and ending elevation values in meters for observations
// to retain.
//
beg_elev = -1000;
end_elev = 100000;

//
// Specify a comma-separated list of PrepBufr report type values to
retain.
// An empty list indicates that all should be retained.
//
//
http://www.emc.ncep.noaa.gov/mmb/data_processing/prepbufr.doc/table_4.htm
//
// e.g. pb_report_type[] = [ 120, 133 ];
//
pb_report_type[] = [];

//
// Specify a comma-separated list of input report type values to retain.
// An empty list indicates that all should be retained.
//
//
http://www.emc.ncep.noaa.gov/mmb/data_processing/prepbufr.doc/table_6.htm
//
// e.g. in_report_type[] = [ 11, 22, 23 ];
//
in_report_type[] = [];

//
// Specify a comma-separated list of instrument type values to retain.
// An empty list indicates that all should be retained.
//
// e.g. instrument_type[] = [ 52, 87 ];
//
instrument_type[] = [];

//
// Beginning and ending vertical levels to retain.
//
beg_level = 1;
end_level = 255;
```

```
//
// Specify a comma-separated list of strings containing grib codes or
// corresponding grib code abbreviations to retain or be derived from
// the available observations.
//
// Grib Codes to be RETAINED:
//    SPFH or 51 for Specific Humidity in kg/kg
//    TMP  or 11 for Temperature in K
//    HGT  or 7  for Height in meters
//    UGRD or 33 for the East-West component of the wind in m/s
//    VGRD or 34 for the North-South component of the wind in m/s
//
// Grib Codes to be DERIVED:
//    DPT   or 17 for Dewpoint Temperature in K
//    WIND  or 32 for Wind Speed in m/s
//    RH    or 52 for Relative Humidity in %
//    MIXR  or 53 for Humidity Mixing Ratio in kg/kg
//    PRMSL or  2 for Pressure Reduced to Mean Sea Level in Pa
//
// http://www.nco.ncep.noaa.gov/pmb/docs/on388/table2.html
//
// e.g. obs_grib_code[] = [ "TMP", "UGRD", "VGRD", "WIND" ];
//
obs_grib_code[] = [ "TMP", "HGT", "UGRD", "VGRD", "DPT", "WIND", "RH",
"PRMSL" ];

//
// Quality mark threshold to indicate which observations to retain.
// Observations with a quality mark equal to or LESS THAN this threshold
// will be retained, while observations with a quality mark GREATER THAN
// this threshold will be discarded.
//
http://www.emc.ncep.noaa.gov/mmb/data_processing/prepbufr.doc/table_7.htm
//
quality_mark_thresh = 2;

//
// Flag to indicate whether observations should be drawn from the top
// of the event stack (most quality controlled) or the bottom of the
// event stack (most raw).  A value of 1 indicates that the top of the
// event stack should be used while a value of zero indicates that the
// bottom should be used.
//
event_stack_flag = 1;

//
// Space comma-separated list of data level categorie values to retain,
// where a value of:
//    0 = Surface level (mass reports only)
//    1 = Mandatory level (upper-air profile reports)
//    2 = Significant temperature level (upper-air profile reports)
//    2 = Significant temperature and winds-by-pressure level
//        (future combined mass and wind upper-air reports)
```

```
//    3 = Winds-by-pressure level (upper-air profile reports)
//    4 = Winds-by-height level (upper-air profile reports)
//    5 = Tropopause level (upper-air profile reports)
//    6 = Reports on a single level
//        (e.g., aircraft, satellite-wind, surface wind,
//         precipitable water retrievals, etc.)
//    7 = Auxiliary levels generated via interpolation from spanning
levels
//        (upper-air profile reports)
// An empty list indicates that all should be retained.
//
//
http://www.emc.ncep.noaa.gov/mmb/data_processing/prepbufr.doc/table_1.htm
//
// e.g. level_category[] = [ 0, 1 ];
//
level_category[] = [];

//
// Directory where temp files should be written by the PB2NC tool
//
tmp_dir = "/tmp";

//
// Indicate a version number for the contents of this configuration file.
// The value should generally not be modified.
//
version = "V2.0";
```

INTENTIONALLY LEFT BLANK

Appendix D. Embedded Scripts: Download and Reformat MADIS Data (Carson)

run_MADIS

```
#Script purpose:  Download MADIS Data for CONUS
# Author: Brown/J.Raby/Y.Raby
# Date: 6/29/2010
# Script Filename: run_MADIS
# Script Location: ~jraby/Scripts
# Script Directory: ~jraby/Scripts
# ==============================================================




# Enter Dates =====================================================

clear
echo "Enter Start Date and Stop Date (YYYYmmdd) <space> (YYYYmmdd)"
read Start_Date Stop_Date

echo " "
echo " "
echo "You Entered Start_Date: $Start_Date and Stop_Date: $Stop_Date"
echo " "
echo " "
echo "Is that correct? (y/n)"
read response
case $response in  # Start of case
(y|Y) echo "Logging on to MADIS ---"
;;
(n|N)
exit 0
;;
esac #  end of case

# cd /MADISdata
/usr/bin/ftp -n -v  rftp.madis-data.noaa.gov << EOT
user armyrl4_madis_research  pEMAT7re
prompt
bin

lcd /MADISdata/LDAD/mesonet/netCDF
cd public/LDAD/mesonet/netCDF
mget $Start_Date*
mget $Stop_Date*


 quit
EOT

echo "Download complete......unzipping files"

cd /MADISdata/LDAD/mesonet/netCDF
gunzip -f  *.gz
```

```
echo "Unzip complete...running MADIS_crop"
cd ~/MET_obs/ncobs

 sed
s/Start_Date/${Start_Date}/g<~/Scripts/MADIS_crop_Template>MADIS_crop_temp
 sed s/Stop_Date/${Stop_Date}/g<MADIS_crop_temp>~/Scripts/MADIS_crop

 rm MADIS_crop_temp

 MADIS_crop
```

Use bookmark pane to go back to main body

run_MADIS_Archive

```
# Script purpose:  Download MADIS Data for CONUS Archived Data
# Author: Brown/J.Raby/Y.Raby
# Date: 6/29/2010
# Script Filename: run_MADIS_Archive
# Script Location:~jraby/Scripts
# Start Directory:~jraby/Scripts
# =============================================================



# Enter Dates ====================================================

clear
echo "Enter Start Date and Stop Date (YYYYmmdd) <space> (YYYYmmdd)"
read Start_Date Stop_Date

yr=`expr substr $Start_Date 1 4`

b_mm=`expr substr $Start_Date 5 2`

e_mm=`expr substr $Stop_Date 5 2`

b_dd=`expr substr $Start_Date 7 2`

e_dd=`expr substr $Stop_Date 7 2`


/usr/bin/ftp -n -v  rftp.madis-data.noaa.gov << EOT
user armyrl4_madis_research  pEMAT7re
prompt
bin



lcd /MADISdata/LDAD/mesonet/netCDF
cd research/archive/$yr/$b_mm/$b_dd/LDAD/mesonet/netCDF
mget $Start_Date*
mget $Stop_Date*

cd ../../../../../../$yr/$e_mm/$e_dd/LDAD/mesonet/netCDF
mget $Start_Date*
mget $Stop_Date*





quit
EOT
```

```
echo "Download complete.....unzipping mesonet files"
cd /MADISdata/LDAD/mesonet/netCDF
gunzip -f *.gz

echo "unzip complete....running MADIS_crop"

cd ~/MET_obs/ncobs

sed
s/Start_Date/${Start_Date}/g<~/Scripts/MADIS_crop_Template>MADIS_crop_temp
sed s/Stop_Date/${Stop_Date}/g<MADIS_crop_temp>~/Scripts/MADIS_crop

rm MADIS_crop_temp

MADIS_crop
```

MADIS_crop_Template

```
#
#===========================================================================
=====
# Script to run runMADIStoMET that uses MADIS prog "sfcdump.exe" to Crop
Data
#     "sfcdump.exe" uses PARameter file "sfcdump.par"
#     MADIS input Data is in the /MADISdata tree
# Modified by J. Raby, 12/15/10 to set the location to the Cape
Canaveral,FL domains.
#===========================================================================
====
time runMADIStoMET st:Start_Date_0600 et:Stop_Date_0600 d1
Location:CapeC_1 Dir:Start_Date_d1
#---------------------------------------------------------------------------
----
time runMADIStoMET st:Start_Date_0600 et:Stop_Date_0600 d2
Location:CapeC_1 Dir:Start_Date_d2
```

MADIS_crop

```
#
#===========================================================================
=====
# Script to run runMADIStoMET that uses MADIS prog "sfcdump.exe" to Crop
Data
#     "sfcdump.exe" uses PARameter file "sfcdump.par"
#     MADIS input Data is in the /MADISdata tree
# Modified by J. Raby, 12/15/10 to set the location to the Cape
Canaveral,FL domains.
#===========================================================================
====
time runMADIStoMET st:20101025_0600 et:20101026_0600 d1 Location:CapeC_1
Dir:20101025_d1
#---------------------------------------------------------------------------
----
time runMADIStoMET st:20101025_0600 et:20101026_0600 d2 Location:CapeC_1
Dir:20101025_d2
```

MADIS_crop_DUG_Template

```
#
#===========================================================================
=====
# Script to run runMADIStoMET that uses MADIS prog "sfcdump.exe" to Crop
Data
#     "sfcdump.exe" uses PARameter file "sfcdump.par"
#     MADIS input Data is in the /MADISdata tree
#===========================================================================
====
time runMADIStoMET st:Start_Date_0600 et:Stop_Date_0600 d1 Dugway_1
Dir:Start_Date_d1
#---------------------------------------------------------------------------
----
time runMADIStoMET st:Start_Date_0600 et:Stop_Date_0600 d2 Dugway_1
Dir:Start_Date_d2
```

MADIS_crop_DUG

```
#
#==========================================================================
=====
# Script to run runMADIStoMET that uses MADIS prog "sfcdump.exe" to Crop
Data
#     "sfcdump.exe" uses PARameter file "sfcdump.par"
#     MADIS input Data is in the /MADISdata tree
#==========================================================================
====
time runMADIStoMET st:20100329_0600 et:20100330_0600 d1 Dugway_1
Dir:20100329_d1
#--------------------------------------------------------------------------
----
time runMADIStoMET st:20100329_0600 et:20100330_0600 d2 Dugway_1
Dir:20100329_d2
```

sfcdump_CapeC_1_d1_Template

```
--------------------------------------------------------------------------
-------
              Database                                    FIXED LENGTH
SECTION
              --------
FSL           'FSL' or 'AWIPS'
--------------------------------------------------------------------------
-------
              Time Window (use 0,0,0 for default)         FIXED LENGTH
SECTION
              -----------
-20            Number of minutes relative to nominal time at which to
start window
20             Number of minutes relative to nominal time at which to end
window
1             0 - return all records within the file containing nominal
time
              1 - return one record per fixed station, closest to nominal
time
              2 - return one record per fixed station, closest to start of
window
              3 - return one record per fixed station, closest to end of
window
              4 - return all records within *window*
--------------------------------------------------------------------------
-------
              Providers (see doc/sfc_providers.txt)       VARIABLE LENGTH
SECTION
              ---------
0             0 - all providers
              N - list of N provider names follow this line
--------------------------------------------------------------------------
-------
              Domain Filter                               FIXED LENGTH
SECTION
              -------------
1             0 - don't filter
              1 - return stations within latitude/longitude corners
              2 - return stations within specified Polar Stereographic
grid
              3 - return stations within specified Lambert Conformal Conic
grid

              Latitude/Longitude Corners (lines skipped if not Domain
Filter 1)
              --------------------------     CapeC_1_d1
26.000        SW corner latitude (north)
-83.200      SW corner longitude (east)
30.800        NE corner latitude (north)
-78.000      NE corner longitude (east)
```

```
               Polar Stereo Specification (lines skipped if not Domain
Filter 2)
               --------------------------
190500.0       Grid box size (meters)
7.838          Latitude (north) of 1st grid point (lower left = SW)
-141.028       Longitude (east) of 1st grid point (lower left = SW)
-95.0          Orientation longitude (east)
33.0           I-coordinate of pole
45.0           J-coordinate of pole
60.0           Lat (north) at which X-Y scale is true
65             Number of grid points in X-direction (I dimension)
43             Number of grid points in Y-direction (J dimension)

               Lambert Conformal Conic Specification (lines skipped if not
Domain Filter 3)
               -------------------------------------
40635.25       Grid box size (meters)
12.19          Latitude (north) of 1st grid point (lower left = SW)
-133.459       Longitude (east) of 1st grid point (lower left = SW)
-95.0          Orientation longitude (east)
25.0           Latitude (north) of first Lambert Conformal tangent
25.0           Latitude (north) of second Lambert Conformal tangent
185            Number of grid points in X-direction (I dimension)
129            Number of grid points in Y-direction (J dimension)
---------------------------------------------------------------------------
-------
               QC Filter                                            FIXED LENGTH
SECTION
               ---------
1               0 - none
                1 - coarse
                2 - screened
                3 - verified
               99 - highest possible
---------------------------------------------------------------------------
-------
            Time Selection                                          FIXED LENGTH
SECTION
               --------------
1              0 - Julian format (YYJJJHHMM)
               1 - Month/Day format (YYYYMMDD_HHMM)
0              0 - Use the nominal time line below
               1 - Use the current time as the nominal time
99999999_9999 Nominal time (in selected format)
---------------------------------------------------------------------------
-------
            Station Selection                                       FIXED LENGTH
SECTION
               -----------------
0              0 - Get all stations
               1 - Get only the station whose name is on the next line
CLFU1          Single station name
---------------------------------------------------------------------------
-------
```

```
          Output Options                              FIXED LENGTH
SECTION
               --------------
0              0 - Lat/lon with 2 digits after decimal place
               1 - Lat with 5 digits after decimal place, lon with 4 digits

0              0 - Text output with headers (original format)
               1 - XML output format
               2 - Comma-separated-variable (CSV) text output without QC
info
               3 - CSV text output with QC data descriptors
               4 - CSV text output with full QC information

0              0 - When using CSV, use -99999.000000 for missing fields
               1 - When using CSV, use blanks for missing fields (Excel-
friendly)
--------------------------------------------------------------------------
-------
               Variables (1 per line, until end of file)   VARIABLE LENGTH
SECTION
               --------- (see doc/sfc_variable_list.txt)
ALTSE
ELEV
T
TD
FF
U
V
RH
P
DD
```

Use bookmark pane to go back to main body

sfcdump_CapeC_1_d2_Template

```
------------------------------------------------------------------------------
-------
              Database                                    FIXED LENGTH
SECTION
              --------
FSL           'FSL' or 'AWIPS'
------------------------------------------------------------------------------
-------
              Time Window (use 0,0,0 for default)         FIXED LENGTH
SECTION
              -----------
-20            Number of minutes relative to nominal time at which to
start window
20             Number of minutes relative to nominal time at which to end
window
1             0 - return all records within the file containing nominal
time
              1 - return one record per fixed station, closest to nominal
time
              2 - return one record per fixed station, closest to start of
window
              3 - return one record per fixed station, closest to end of
window
              4 - return all records within *window*
------------------------------------------------------------------------------
-------
              Providers (see doc/sfc_providers.txt)       VARIABLE LENGTH
SECTION
              ---------
0             0 - all providers
              N - list of N provider names follow this line
------------------------------------------------------------------------------
-------
              Domain Filter                               FIXED LENGTH
SECTION
              -------------
1             0 - don't filter
              1 - return stations within latitude/longitude corners
              2 - return stations within specified Polar Stereographic
grid
              3 - return stations within specified Lambert Conformal Conic
grid

              Latitude/Longitude Corners (lines skipped if not Domain
Filter 1)
              --------------------------     CapeC_1_d2
28.010        SW corner latitude (north)
-81.020      SW corner longitude (east)
28.910        NE corner latitude (north)
-80.000      NE corner longitude (east)
```

```
              Polar Stereo Specification (lines skipped if not Domain
Filter 2)
              --------------------------
190500.0      Grid box size (meters)
7.838         Latitude (north) of 1st grid point (lower left = SW)
-141.028      Longitude (east) of 1st grid point (lower left = SW)
-95.0         Orientation longitude (east)
33.0          I-coordinate of pole
45.0          J-coordinate of pole
60.0          Lat (north) at which X-Y scale is true
65            Number of grid points in X-direction (I dimension)
43            Number of grid points in Y-direction (J dimension)

              Lambert Conformal Conic Specification (lines skipped if not
Domain Filter 3)
              -------------------------------------
40635.25      Grid box size (meters)
12.19         Latitude (north) of 1st grid point (lower left = SW)
-133.459      Longitude (east) of 1st grid point (lower left = SW)
-95.0         Orientation longitude (east)
25.0          Latitude (north) of first Lambert Conformal tangent
25.0          Latitude (north) of second Lambert Conformal tangent
185           Number of grid points in X-direction (I dimension)
129           Number of grid points in Y-direction (J dimension)
--------------------------------------------------------------------------
-------
              QC Filter                                      FIXED LENGTH
SECTION
              ---------
1              0 - none
               1 - coarse
               2 - screened
               3 - verified
              99 - highest possible
--------------------------------------------------------------------------
-------
            Time Selection                                 FIXED LENGTH
SECTION
              --------------
1             0 - Julian format (YYJJJHHMM)
              1 - Month/Day format (YYYYMMDD_HHMM)
0             0 - Use the nominal time line below
              1 - Use the current time as the nominal time
99999999_9999 Nominal time (in selected format)
--------------------------------------------------------------------------
-------
            Station Selection                              FIXED LENGTH
SECTION
              -----------------
0             0 - Get all stations
              1 - Get only the station whose name is on the next line
CLFU1         Single station name
--------------------------------------------------------------------------
-------
```

```
            Output Options                               FIXED LENGTH
SECTION
              --------------
0             0 - Lat/lon with 2 digits after decimal place
              1 - Lat with 5 digits after decimal place, lon with 4 digits

0             0 - Text output with headers (original format)
              1 - XML output format
              2 - Comma-separated-variable (CSV) text output without QC
info
              3 - CSV text output with QC data descriptors
              4 - CSV text output with full QC information

0             0 - When using CSV, use -99999.000000 for missing fields
              1 - When using CSV, use blanks for missing fields (Excel-
friendly)
--------------------------------------------------------------------------
-------
              Variables (1 per line, until end of file)   VARIABLE LENGTH
SECTION
              --------- (see doc/sfc_variable_list.txt)
ALTSE
ELEV
T
TD
FF
U
V
RH
P
DD
```

Use bookmark pane to go back to main body

sfcdump_Dugway_1_d1_Template

```
--------------------------------------------------------------------------
-------
              Database                                    FIXED LENGTH
SECTION
              --------
FSL           'FSL' or 'AWIPS'
--------------------------------------------------------------------------
-------
              Time Window (use 0,0,0 for default)         FIXED LENGTH
SECTION
              -----------
-20            Number of minutes relative to nominal time at which to
start window
20             Number of minutes relative to nominal time at which to end
window
1             0 - return all records within the file containing nominal
time
              1 - return one record per fixed station, closest to nominal
time
              2 - return one record per fixed station, closest to start of
window
              3 - return one record per fixed station, closest to end of
window
              4 - return all records within *window*
--------------------------------------------------------------------------
-------
              Providers (see doc/sfc_providers.txt)       VARIABLE LENGTH
SECTION
              ---------
0             0 - all providers
              N - list of N provider names follow this line
--------------------------------------------------------------------------
-------
              Domain Filter                               FIXED LENGTH
SECTION
              -------------
1             0 - don't filter
              1 - return stations within latitude/longitude corners
              2 - return stations within specified Polar Stereographic
grid
              3 - return stations within specified Lambert Conformal Conic
grid

              Latitude/Longitude Corners (lines skipped if not Domain
Filter 1)
              --------------------------     Dugway_1_d1
37.651        SW corner latitude (north)
-116.754      SW corner longitude (east)
42.531        NE corner latitude (north)
-110.360      NE corner longitude (east)
```

```
              Polar Stereo Specification (lines skipped if not Domain
Filter 2)
              --------------------------
190500.0      Grid box size (meters)
7.838         Latitude (north) of 1st grid point (lower left = SW)
-141.028      Longitude (east) of 1st grid point (lower left = SW)
-95.0         Orientation longitude (east)
33.0          I-coordinate of pole
45.0          J-coordinate of pole
60.0          Lat (north) at which X-Y scale is true
65            Number of grid points in X-direction (I dimension)
43            Number of grid points in Y-direction (J dimension)

              Lambert Conformal Conic Specification (lines skipped if not
Domain Filter 3)
              -------------------------------------
40635.25      Grid box size (meters)
12.19         Latitude (north) of 1st grid point (lower left = SW)
-133.459      Longitude (east) of 1st grid point (lower left = SW)
-95.0         Orientation longitude (east)
25.0          Latitude (north) of first Lambert Conformal tangent
25.0          Latitude (north) of second Lambert Conformal tangent
185           Number of grid points in X-direction (I dimension)
129           Number of grid points in Y-direction (J dimension)
--------------------------------------------------------------------------
-------
              QC Filter                                    FIXED LENGTH
SECTION
              ---------
1              0 - none
               1 - coarse
               2 - screened
               3 - verified
              99 - highest possible
--------------------------------------------------------------------------
-------
            Time Selection                                 FIXED LENGTH
SECTION
              --------------
1             0 - Julian format (YYJJJHHMM)
              1 - Month/Day format (YYYYMMDD_HHMM)
0             0 - Use the nominal time line below
              1 - Use the current time as the nominal time
99999999_9999 Nominal time (in selected format)
--------------------------------------------------------------------------
-------
            Station Selection                              FIXED LENGTH
SECTION
              -----------------
0             0 - Get all stations
              1 - Get only the station whose name is on the next line
CLFU1         Single station name
--------------------------------------------------------------------------
-------
```

```
          Output Options                             FIXED LENGTH
SECTION
              --------------
0             0 - Lat/lon with 2 digits after decimal place
              1 - Lat with 5 digits after decimal place, lon with 4 digits

0             0 - Text output with headers (original format)
              1 - XML output format
              2 - Comma-separated-variable (CSV) text output without QC
info
              3 - CSV text output with QC data descriptors
              4 - CSV text output with full QC information

0             0 - When using CSV, use -99999.000000 for missing fields
              1 - When using CSV, use blanks for missing fields (Excel-
friendly)
---------------------------------------------------------------------------
-------
              Variables (1 per line, until end of file)   VARIABLE LENGTH
SECTION
              --------- (see doc/sfc_variable_list.txt)
ALTSE
ELEV
T
TD
FF
U
V
RH
P
DD
```

sfcdump_Dugway_1_d2_Template

```
--------------------------------------------------------------------------
-------
              Database                                    FIXED LENGTH
SECTION
              --------
FSL           'FSL' or 'AWIPS'
--------------------------------------------------------------------------
-------
              Time Window (use 0,0,0 for default)         FIXED LENGTH
SECTION
              -----------
-20            Number of minutes relative to nominal time at which to
start window
20             Number of minutes relative to nominal time at which to end
window
1             0 - return all records within the file containing nominal
time
              1 - return one record per fixed station, closest to nominal
time
              2 - return one record per fixed station, closest to start of
window
              3 - return one record per fixed station, closest to end of
window
              4 - return all records within *window*
--------------------------------------------------------------------------
-------
              Providers (see doc/sfc_providers.txt)       VARIABLE LENGTH
SECTION
              ---------
0             0 - all providers
              N - list of N provider names follow this line
--------------------------------------------------------------------------
-------
              Domain Filter                               FIXED LENGTH
SECTION
              -------------
1             0 - don't filter
              1 - return stations within latitude/longitude corners
              2 - return stations within specified Polar Stereographic
grid
              3 - return stations within specified Lambert Conformal Conic
grid

              Latitude/Longitude Corners (lines skipped if not Domain
Filter 1)
              --------------------------     Dugway_1_d2
39.679        SW corner latitude (north)
-114.032      SW corner longitude (east)
40.588        NE corner latitude (north)
-112.844      NE corner longitude (east)
```

```
              Polar Stereo Specification (lines skipped if not Domain
Filter 2)
              --------------------------
190500.0      Grid box size (meters)
7.838         Latitude (north) of 1st grid point (lower left = SW)
-141.028      Longitude (east) of 1st grid point (lower left = SW)
-95.0         Orientation longitude (east)
33.0          I-coordinate of pole
45.0          J-coordinate of pole
60.0          Lat (north) at which X-Y scale is true
65            Number of grid points in X-direction (I dimension)
43            Number of grid points in Y-direction (J dimension)

              Lambert Conformal Conic Specification (lines skipped if not
Domain Filter 3)
              -------------------------------------
40635.25      Grid box size (meters)
12.19         Latitude (north) of 1st grid point (lower left = SW)
-133.459      Longitude (east) of 1st grid point (lower left = SW)
-95.0         Orientation longitude (east)
25.0          Latitude (north) of first Lambert Conformal tangent
25.0          Latitude (north) of second Lambert Conformal tangent
185           Number of grid points in X-direction (I dimension)
129           Number of grid points in Y-direction (J dimension)
--------------------------------------------------------------------------
-------
              QC Filter                                   FIXED LENGTH
SECTION
              ---------
1              0 - none
               1 - coarse
               2 - screened
               3 - verified
              99 - highest possible
--------------------------------------------------------------------------
-------
            Time Selection                                FIXED LENGTH
SECTION
              --------------
1             0 - Julian format (YYJJJHHMM)
              1 - Month/Day format (YYYYMMDD_HHMM)
0             0 - Use the nominal time line below
              1 - Use the current time as the nominal time
99999999_9999 Nominal time (in selected format)
--------------------------------------------------------------------------
-------
            Station Selection                             FIXED LENGTH
SECTION
              -----------------
0             0 - Get all stations
              1 - Get only the station whose name is on the next line
CLFU1         Single station name
--------------------------------------------------------------------------
-------
```

```
            Output Options                               FIXED LENGTH
SECTION
              --------------
0             0 - Lat/lon with 2 digits after decimal place
              1 - Lat with 5 digits after decimal place, lon with 4 digits

0             0 - Text output with headers (original format)
              1 - XML output format
              2 - Comma-separated-variable (CSV) text output without QC
info
              3 - CSV text output with QC data descriptors
              4 - CSV text output with full QC information

0             0 - When using CSV, use -99999.000000 for missing fields
              1 - When using CSV, use blanks for missing fields (Excel-
friendly)
--------------------------------------------------------------------------
-------
              Variables (1 per line, until end of file)   VARIABLE LENGTH
SECTION
              --------- (see doc/sfc_variable_list.txt)
ALTSE
ELEV
T
TD
FF
U
V
RH
P
DD
```

runMADIStoMET

```
#===========================================================================
=====
author      ()    {
${ECHO}     "#    12-May-2008\t\t~rflaniga/Scripts/${script_name}"
${ECHO}     "#    R.Flanigan\t\t(505)678-2717\tRFlanigan@Q.com"
}
#===========================================================================
=====
options     ()    {
${ECHO}     "# NONE:"
author
${ECHO}     "#-----------------------------------------------------------------
---------"
${ECHO}     "# FORMAT: ${script_name} StartTime:xx EndTime:yy
Location:Dugway_1 Domain:1"
${ECHO}     "# FORMAT: ${script_name} ST:20090326_0600 ET:20090327_0600
Dugway_1 d2"
${ECHO}     "#-----------------------------------------------------------------
---------"
${ECHO}     "#    Script to Run the Format MASIS Data Script for 25 hr of
Data"
${ECHO}     "#-----------------------------------------------------------------
---------"
}
#===========================================================================
=====
#     cp sfcdump.par_DUGd02_hr0 sfcdump.par
#     sfcdump.exe
#     cp sfcdump.txt ./20090401/sfcdump_hr0
#     formatMADISdataMET ./20090401/hr0_06Z.txt
#     ...
#     cp sfcdump.par_DUGd02_hr24 sfcdump.par
#     sfcdump.exe
#     cp sfcdump.txt ./20090401/sfcdump_hr24
#     formatMADISdataMET ./20090401/hr24_06Z.txt
#---------------------------------------------------------------------------
-----
#     ERROR:      "MSFCSTA: NO DATA FOR"
#===========================================================================
=====
decode_command_line_String   ()    {

for param       in      $1
do
#               ${ECHO} "PARAM=${param}"
      case  ${param}   in
      LOCATION:*|Location:*|L:*|location:*|l:*)
            Location="`echo "${param}" | cut -d ":" -f 2 - `"
            ;;
      DUGWAY_1|DugWay_1|Dugway_1|dugway_1)
            Location="Dugway_1"
            ;;
```

```
	DIR:*|Dir:*|D:*|dir:*|d:*)
		OutDirName="`echo "${param}" | cut -d ":" -f 2 - `"
		SetupOutDir
		;;
	STARTTIME:*|StartTime:*|ST:*|starttime:*|st:*)
		StartTime="`echo "${param}" | cut -d ":" -f 2 - `"
		SetupStartTime
		;;
	ENDTIME:*|EndTime:*|ET:*|endtime:*|et:*)
		EndTime="`echo "${param}" | cut -d ":" -f 2 - `"
		SetupEndTime
		;;
	DOMAIN:*|Domain:*|domain:*)
		TDN="`echo "${param}" | cut -d ":" -f 2 - `"
		DomainNum="`expr ${TDN} + 0 `"
		if [ "${DomainNum}" -lt "1" ]
		then
			${ECHO} "\tERROR: Domain # < 1 \"${DomainNum}\""
			DomainNum=""
		elif [ "${DomainNum}" -gt "10" ]
		then
			${ECHO} "\tWARNING: Domain # > 10 \"${DomainNum}\""
		fi
		;;
	OUTPUTDIR:*|OutputDir:*|OD:*|outputdir:*|od:*)
		OutputDir="`echo "${param}" | cut -d ":" -f 2 - `"
		;;
	D01|D1|d01|d1)
		DomainNum="1"
		;;
	D02|D2|d02|d2)
		DomainNum="2"
		;;
	D03|D3|d03|d3)
		DomainNum="3"
		;;
	*)
		${ECHO} "\tWARNING: Invalid Parameter \"${param}\""
		;;
	esac

done
}
#=============================================================================
=====
SetupOutDir ()	{

	if [ ! -d "${OutDirName}" ]
	then
		mkdir -p	"${OutDirName}"
	fi
	chmod 775	"${OutDirName}"
	OutDirName="${OutDirName}/"
	${ECHO} "\t${script_name}: SetupOutDir \"${OutDirName}\""
```

```
}
#=====================================================================
=====
SetupStartTime (){

      ST_Year="${StartTime:0:4}"
      ST_Month="${StartTime:4:2}"
      ST_Day="${StartTime:6:2}"
      ST_Hour="${StartTime:9:2}"
      CT_Year="${ST_Year}"
      CT_Month="${ST_Month}"
      CT_Day="${ST_Day}"
      CT_Hour="${ST_Hour}"
      CurrentTime="${CT_Year}${CT_Month}${CT_Day}_${CT_Hour}00"
      ${ECHO} "\t${script_name}: SetupStartTime \"${CurrentTime}\""
}
#=====================================================================
=====
SetupEndTime ()  {

      ET_Year="${EndTime:0:4}"
      ET_Month="${EndTime:4:2}"
      ET_Day="${EndTime:6:2}"
      ET_Hour="${StartTime:9:2}"
      EndTime="${ET_Year}${ET_Month}${ET_Day}_${ET_Hour}00"
      ${ECHO} "\t${script_name}: SetupEndTime \"${EndTime}\""
}
#=====================================================================
=====
MainLoop (){

${ECHO} "\t${script_name}: MainLoop"
date  >     ${LogFileName}
#---------------------------------------------------------------------
-----
while [ ${CurrentTime} != "${EndTime}" ]
do
      ${ECHO} "\t${script_name}: MainLoop Time:\"${CurrentTime}\"
Domain:\"d${DomainNum}\""
      rm -rf      sfcdump.txt # Cleanout Old File
      MakeParamFile    ${CurrentTime}
      MakeOutputFileNames
      sfcdump.exe >>    ${LogFileName}
      chmod 664         sfcdump.txt
      cp    sfcdump.txt ${OutDirName}${RawFileName}
      ${FormatMADIS_Program} ${OutDirName}${OutputFileName}
      IncCurrentTime
done
#---------------------------------------------------------------------
-----
${ECHO} "\t${script_name}: MainLoop Time:\"${CurrentTime}\"
Domain:\"d${DomainNum}\""
MakeParamFile    ${CurrentTime}
MakeOutputFileNames
```

```
sfcdump.exe >>    ${LogFileName}
chmod 664         sfcdump.txt
cp    sfcdump.txt ${OutDirName}${RawFileName}
${FormatMADIS_Program} ${OutDirName}${OutputFileName}
#--------------------------------------------------------------------------
-----
date  >>    ${LogFileName}
chmod 664   ${LogFileName}
if [ -d "${OutDirName}" ]
then
      cp    sfcdump.par ${OutDirName}
      cp    ${LogFileName}   ${OutDirName}
      chmod 664   ${OutDirName}*
      ls          ${OutDirName}*
fi
#--------------------------------------------------------------------------
-----
CheckForErrorInRun     ${LogFileName}
}
#==========================================================================
=====
MakeParamFile () {

LocalTime="$1"

TemplateFileName="sfcdump_${Location}_d${DomainNum}_Template"
if [ -s "${TemplateFileName}" ] && [ -r "${TemplateFileName}" ]
then
      ${ECHO} "s=99999999_9999=${LocalTime}="       >     sedcmd

      sed -f sedcmd ${TemplateFileName} >     sfcdump.par
      rm          sedcmd
      chmod 664   sfcdump.par
else
      ${ECHO} "\tERROR: Can Not Open Template File
\"${TemplateFileName}\""
      exit  5
fi
}
#==========================================================================
=====
IncCurrentTime (){

      Model_Hour="`expr ${Model_Hour} + 1`"
      CT_Hour="`expr ${CT_Hour} + 1`"
      if [ "${CT_Hour}" -lt "10" ]
      then
             CT_Hour="0${CT_Hour}"
      fi
      if [ "${CT_Hour}" -gt "23" ]
      then
            CT_Hour="00"
            CT_Year="${ET_Year}"
            CT_Month="${ET_Month}"
```

```
		CT_Day="${ET_Day}"
	fi
	CurrentTime="${CT_Year}${CT_Month}${CT_Day}_${CT_Hour}00"
}
#==========================================================================
=====
MakeOutputFileNames () {

RawFileName="sfcdump_hr${Model_Hour}"
OutputFileName="hr${Model_Hour}_${CT_Hour}Z.txt"
}
#==========================================================================
=====
CheckForErrorInRun ()  {

LocalLogFile="$1"

	ERRORS="`grep 'MSFCSTA: NO DATA FOR' ${LocalLogFile}`"
	if [ "${ERRORS}" != "" ]
	then
		${ECHO}	"\nERRORS Found in Run!\n${ERRORS}\n"
	fi
}
#==========================================================================
=====
#==========================================================================
=====
#	MUST save $* to variable before any Function calls!
command_line_String="$*"
script_name="`echo $0 | awk -F/ '{printf("%s",$NF)}'`"
#--------------------------------------------------------------------------
-----
ECHO="`setup_echo_command`"
#	${ECHO}	"STRING=${command_line_options}"
#--------------------------------------------------------------------------
-----
FormatMADIS_Program="formatMADISdataMET"
Location=""
DomainNum=""
OutputDir=""
#	--------------------------------------------------------------------
---
StartTime=""
ST_Year=""
ST_Month=""
ST_Day=""
ST_Hour=""
EndTime=""
ET_Year=""
ET_Month=""
ET_Day=""
ET_Hour=""
CurrentTime=""
CT_Year=""
```

```
CT_Month=""
CT_Day=""
CT_Hour=""
Model_Hour="0"
#    ---------------------------------------------------------------------
---
TemplateFileName=""
TemplateFileFound="FALSE"
ItPutFileNameList="sfcdump"
RawFileName=""
OutDirName=""
OutPutFileName=""
LogFileName="sfcdump.Log"
#---------------------------------------------------------------------------
-----
if [ "${command_line_String}" = "" ]
then
      options
      exit 1
else
      decode_command_line_String   "${command_line_String}"
      if [ "${StartTime}" = "" ] || [ "${EndTime}" = "" ]
      then
            ${ECHO}     "ERROR: Missing Start or End Times"
            options
            exit 2
      elif [ "${Location}" = "" ]
      then
            ${ECHO}     "ERROR: Missing Location Model was Run"
            options
            exit 3
      elif [ "${DomainNum}" = "" ]
      then
            ${ECHO}     "ERROR: Missing Domain Number [1 2 3]"
            options
            exit 4
      else
            MainLoop
      fi
fi
#---------------------------------------------------------------------------
----
exit  0
#---------------------------------------------------------------------------
----
#
```

ascii2netcdf

```
#Script purpose:  Convert MADIS Data from ascii to netcdf for KSC Domains
1 & 2
# Author: Brown/Raby
# Date: 4/22/2010 - modified 1/12/11 by John Raby to work with KSC data
# Script Filename: ascii2netcdf
# Script Location: ~jraby/Scripts
# Scripts Directory: ~jraby/Scripts
# ===============================================================




# Enter Dates ====================================================

clear
echo "Enter Start Date (YYYYmmdd)"
read Start_Date

echo " "
echo " "
echo "You Entered Start_Date: $Start_Date"
echo " "
echo " "



sed
s/Start_Date/${Start_Date}/g<~/Scripts/ascii2nc_KSCd01_06_all_template>~/S
cripts/ascii2nc_KSCd01_06_all.sh
ascii2nc_KSCd01_06_all.sh


sed
s/Start_Date/${Start_Date}/g<~/Scripts/ascii2nc_KSCd02_06_all_template>~/S
cripts/ascii2nc_KSCd02_06_all.sh
ascii2nc_KSCd02_06_all.sh
```

ascii2nc_KSCd01_06_all_template

```
ascii2nc ../MET_obs/ncobs/Start_Date_d1/hr0_06Z.txt
../MET_obs/ncobs/Start_Date_d1/KSCd01_06_00_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d1/hr1_07Z.txt
../MET_obs/ncobs/Start_Date_d1/KSCd01_06_01_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d1/hr2_08Z.txt
../MET_obs/ncobs/Start_Date_d1/KSCd01_06_02_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d1/hr3_09Z.txt
../MET_obs/ncobs/Start_Date_d1/KSCd01_06_03_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d1/hr4_10Z.txt
../MET_obs/ncobs/Start_Date_d1/KSCd01_06_04_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d1/hr5_11Z.txt
../MET_obs/ncobs/Start_Date_d1/KSCd01_06_05_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d1/hr6_12Z.txt
../MET_obs/ncobs/Start_Date_d1/KSCd01_06_06_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d1/hr7_13Z.txt
../MET_obs/ncobs/Start_Date_d1/KSCd01_06_07_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d1/hr8_14Z.txt
../MET_obs/ncobs/Start_Date_d1/KSCd01_06_08_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d1/hr9_15Z.txt
../MET_obs/ncobs/Start_Date_d1/KSCd01_06_09_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d1/hr10_16Z.txt
../MET_obs/ncobs/Start_Date_d1/KSCd01_06_10_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d1/hr11_17Z.txt
../MET_obs/ncobs/Start_Date_d1/KSCd01_06_11_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d1/hr12_18Z.txt
../MET_obs/ncobs/Start_Date_d1/KSCd01_06_12_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d1/hr13_19Z.txt
../MET_obs/ncobs/Start_Date_d1/KSCd01_06_13_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d1/hr14_20Z.txt
../MET_obs/ncobs/Start_Date_d1/KSCd01_06_14_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d1/hr15_21Z.txt
../MET_obs/ncobs/Start_Date_d1/KSCd01_06_15_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d1/hr16_22Z.txt
../MET_obs/ncobs/Start_Date_d1/KSCd01_06_16_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d1/hr17_23Z.txt
../MET_obs/ncobs/Start_Date_d1/KSCd01_06_17_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d1/hr18_00Z.txt
../MET_obs/ncobs/Start_Date_d1/KSCd01_06_18_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d1/hr19_01Z.txt
../MET_obs/ncobs/Start_Date_d1/KSCd01_06_19_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d1/hr20_02Z.txt
../MET_obs/ncobs/Start_Date_d1/KSCd01_06_20_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d1/hr21_03Z.txt
../MET_obs/ncobs/Start_Date_d1/KSCd01_06_21_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d1/hr22_04Z.txt
../MET_obs/ncobs/Start_Date_d1/KSCd01_06_22_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d1/hr23_05Z.txt
../MET_obs/ncobs/Start_Date_d1/KSCd01_06_23_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d1/hr24_06Z.txt
../MET_obs/ncobs/Start_Date_d1/KSCd01_06_24_as.nc -v 3
```

ascii2nc_KSCd01_06_all.sh

```
ascii2nc ../MET_obs/ncobs/20101025_d1/hr0_06Z.txt
../MET_obs/ncobs/20101025_d1/KSCd01_06_00_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20101025_d1/hr1_07Z.txt
../MET_obs/ncobs/20101025_d1/KSCd01_06_01_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20101025_d1/hr2_08Z.txt
../MET_obs/ncobs/20101025_d1/KSCd01_06_02_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20101025_d1/hr3_09Z.txt
../MET_obs/ncobs/20101025_d1/KSCd01_06_03_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20101025_d1/hr4_10Z.txt
../MET_obs/ncobs/20101025_d1/KSCd01_06_04_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20101025_d1/hr5_11Z.txt
../MET_obs/ncobs/20101025_d1/KSCd01_06_05_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20101025_d1/hr6_12Z.txt
../MET_obs/ncobs/20101025_d1/KSCd01_06_06_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20101025_d1/hr7_13Z.txt
../MET_obs/ncobs/20101025_d1/KSCd01_06_07_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20101025_d1/hr8_14Z.txt
../MET_obs/ncobs/20101025_d1/KSCd01_06_08_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20101025_d1/hr9_15Z.txt
../MET_obs/ncobs/20101025_d1/KSCd01_06_09_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20101025_d1/hr10_16Z.txt
../MET_obs/ncobs/20101025_d1/KSCd01_06_10_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20101025_d1/hr11_17Z.txt
../MET_obs/ncobs/20101025_d1/KSCd01_06_11_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20101025_d1/hr12_18Z.txt
../MET_obs/ncobs/20101025_d1/KSCd01_06_12_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20101025_d1/hr13_19Z.txt
../MET_obs/ncobs/20101025_d1/KSCd01_06_13_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20101025_d1/hr14_20Z.txt
../MET_obs/ncobs/20101025_d1/KSCd01_06_14_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20101025_d1/hr15_21Z.txt
../MET_obs/ncobs/20101025_d1/KSCd01_06_15_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20101025_d1/hr16_22Z.txt
../MET_obs/ncobs/20101025_d1/KSCd01_06_16_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20101025_d1/hr17_23Z.txt
../MET_obs/ncobs/20101025_d1/KSCd01_06_17_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20101025_d1/hr18_00Z.txt
../MET_obs/ncobs/20101025_d1/KSCd01_06_18_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20101025_d1/hr19_01Z.txt
../MET_obs/ncobs/20101025_d1/KSCd01_06_19_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20101025_d1/hr20_02Z.txt
../MET_obs/ncobs/20101025_d1/KSCd01_06_20_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20101025_d1/hr21_03Z.txt
../MET_obs/ncobs/20101025_d1/KSCd01_06_21_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20101025_d1/hr22_04Z.txt
../MET_obs/ncobs/20101025_d1/KSCd01_06_22_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20101025_d1/hr23_05Z.txt
../MET_obs/ncobs/20101025_d1/KSCd01_06_23_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20101025_d1/hr24_06Z.txt
../MET_obs/ncobs/20101025_d1/KSCd01_06_24_as.nc -v 3
```

ascii2nc_KSCd02_06_all_template

```
ascii2nc ../MET_obs/ncobs/Start_Date_d2/hr0_06Z.txt
../MET_obs/ncobs/Start_Date_d2/KSCd02_06_00_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d2/hr1_07Z.txt
../MET_obs/ncobs/Start_Date_d2/KSCd02_06_01_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d2/hr2_08Z.txt
../MET_obs/ncobs/Start_Date_d2/KSCd02_06_02_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d2/hr3_09Z.txt
../MET_obs/ncobs/Start_Date_d2/KSCd02_06_03_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d2/hr4_10Z.txt
../MET_obs/ncobs/Start_Date_d2/KSCd02_06_04_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d2/hr5_11Z.txt
../MET_obs/ncobs/Start_Date_d2/KSCd02_06_05_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d2/hr6_12Z.txt
../MET_obs/ncobs/Start_Date_d2/KSCd02_06_06_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d2/hr7_13Z.txt
../MET_obs/ncobs/Start_Date_d2/KSCd02_06_07_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d2/hr8_14Z.txt
../MET_obs/ncobs/Start_Date_d2/KSCd02_06_08_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d2/hr9_15Z.txt
../MET_obs/ncobs/Start_Date_d2/KSCd02_06_09_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d2/hr10_16Z.txt
../MET_obs/ncobs/Start_Date_d2/KSCd02_06_10_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d2/hr11_17Z.txt
../MET_obs/ncobs/Start_Date_d2/KSCd02_06_11_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d2/hr12_18Z.txt
../MET_obs/ncobs/Start_Date_d2/KSCd02_06_12_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d2/hr13_19Z.txt
../MET_obs/ncobs/Start_Date_d2/KSCd02_06_13_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d2/hr14_20Z.txt
../MET_obs/ncobs/Start_Date_d2/KSCd02_06_14_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d2/hr15_21Z.txt
../MET_obs/ncobs/Start_Date_d2/KSCd02_06_15_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d2/hr16_22Z.txt
../MET_obs/ncobs/Start_Date_d2/KSCd02_06_16_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d2/hr17_23Z.txt
../MET_obs/ncobs/Start_Date_d2/KSCd02_06_17_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d2/hr18_00Z.txt
../MET_obs/ncobs/Start_Date_d2/KSCd02_06_18_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d2/hr19_01Z.txt
../MET_obs/ncobs/Start_Date_d2/KSCd02_06_19_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d2/hr20_02Z.txt
../MET_obs/ncobs/Start_Date_d2/KSCd02_06_20_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d2/hr21_03Z.txt
../MET_obs/ncobs/Start_Date_d2/KSCd02_06_21_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d2/hr22_04Z.txt
../MET_obs/ncobs/Start_Date_d2/KSCd02_06_22_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d2/hr23_05Z.txt
../MET_obs/ncobs/Start_Date_d2/KSCd02_06_23_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d2/hr24_06Z.txt
../MET_obs/ncobs/Start_Date_d2/KSCd02_06_24_as.nc -v 3
```

ascii2nc_KSCd02_06_all.sh

```
ascii2nc ../MET_obs/ncobs/20101025_d2/hr0_06Z.txt
../MET_obs/ncobs/20101025_d2/KSCd02_06_00_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20101025_d2/hr1_07Z.txt
../MET_obs/ncobs/20101025_d2/KSCd02_06_01_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20101025_d2/hr2_08Z.txt
../MET_obs/ncobs/20101025_d2/KSCd02_06_02_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20101025_d2/hr3_09Z.txt
../MET_obs/ncobs/20101025_d2/KSCd02_06_03_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20101025_d2/hr4_10Z.txt
../MET_obs/ncobs/20101025_d2/KSCd02_06_04_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20101025_d2/hr5_11Z.txt
../MET_obs/ncobs/20101025_d2/KSCd02_06_05_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20101025_d2/hr6_12Z.txt
../MET_obs/ncobs/20101025_d2/KSCd02_06_06_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20101025_d2/hr7_13Z.txt
../MET_obs/ncobs/20101025_d2/KSCd02_06_07_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20101025_d2/hr8_14Z.txt
../MET_obs/ncobs/20101025_d2/KSCd02_06_08_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20101025_d2/hr9_15Z.txt
../MET_obs/ncobs/20101025_d2/KSCd02_06_09_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20101025_d2/hr10_16Z.txt
../MET_obs/ncobs/20101025_d2/KSCd02_06_10_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20101025_d2/hr11_17Z.txt
../MET_obs/ncobs/20101025_d2/KSCd02_06_11_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20101025_d2/hr12_18Z.txt
../MET_obs/ncobs/20101025_d2/KSCd02_06_12_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20101025_d2/hr13_19Z.txt
../MET_obs/ncobs/20101025_d2/KSCd02_06_13_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20101025_d2/hr14_20Z.txt
../MET_obs/ncobs/20101025_d2/KSCd02_06_14_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20101025_d2/hr15_21Z.txt
../MET_obs/ncobs/20101025_d2/KSCd02_06_15_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20101025_d2/hr16_22Z.txt
../MET_obs/ncobs/20101025_d2/KSCd02_06_16_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20101025_d2/hr17_23Z.txt
../MET_obs/ncobs/20101025_d2/KSCd02_06_17_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20101025_d2/hr18_00Z.txt
../MET_obs/ncobs/20101025_d2/KSCd02_06_18_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20101025_d2/hr19_01Z.txt
../MET_obs/ncobs/20101025_d2/KSCd02_06_19_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20101025_d2/hr20_02Z.txt
../MET_obs/ncobs/20101025_d2/KSCd02_06_20_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20101025_d2/hr21_03Z.txt
../MET_obs/ncobs/20101025_d2/KSCd02_06_21_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20101025_d2/hr22_04Z.txt
../MET_obs/ncobs/20101025_d2/KSCd02_06_22_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20101025_d2/hr23_05Z.txt
../MET_obs/ncobs/20101025_d2/KSCd02_06_23_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20101025_d2/hr24_06Z.txt
../MET_obs/ncobs/20101025_d2/KSCd02_06_24_as.nc -v 3
```

Use bookmark pane to go back to main body

ascii2netcdf_Dug

```
#Script purpose:  Convert MADIS Data from ascii to netcdf for DUG Domains
1 & 2
# Author: Brown/Raby
# Date: 4/22/2010 - modified 2/15/11 by John Raby to work with DUG data
# Script Filename: ascii2netcdf
# Script Location: ~jraby/Scripts
# Scripts Directory: ~jraby/Scripts
# ===============================================================




# Enter Dates ==================================================

clear
echo "Enter Start Date (YYYYmmdd)"
read Start_Date

echo " "
echo " "
echo "You Entered Start_Date: $Start_Date"
echo " "
echo " "



sed
s/Start_Date/${Start_Date}/g<~/Scripts/ascii2nc_DUGd01_06_all_template>~/S
cripts/ascii2nc_DUGd01_06_all.sh
ascii2nc_DUGd01_06_all.sh


sed
s/Start_Date/${Start_Date}/g<~/Scripts/ascii2nc_DUGd02_06_all_template>~/S
cripts/ascii2nc_DUGd02_06_all.sh
ascii2nc_DUGd02_06_all.sh
```

ascii2nc_DUGd01_06_all_template

```
ascii2nc ../MET_obs/ncobs/Start_Date_d1/hr0_06Z.txt
../MET_obs/ncobs/Start_Date_d1/DUGd01_06_00_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d1/hr1_07Z.txt
../MET_obs/ncobs/Start_Date_d1/DUGd01_06_01_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d1/hr2_08Z.txt
../MET_obs/ncobs/Start_Date_d1/DUGd01_06_02_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d1/hr3_09Z.txt
../MET_obs/ncobs/Start_Date_d1/DUGd01_06_03_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d1/hr4_10Z.txt
../MET_obs/ncobs/Start_Date_d1/DUGd01_06_04_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d1/hr5_11Z.txt
../MET_obs/ncobs/Start_Date_d1/DUGd01_06_05_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d1/hr6_12Z.txt
../MET_obs/ncobs/Start_Date_d1/DUGd01_06_06_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d1/hr7_13Z.txt
../MET_obs/ncobs/Start_Date_d1/DUGd01_06_07_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d1/hr8_14Z.txt
../MET_obs/ncobs/Start_Date_d1/DUGd01_06_08_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d1/hr9_15Z.txt
../MET_obs/ncobs/Start_Date_d1/DUGd01_06_09_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d1/hr10_16Z.txt
../MET_obs/ncobs/Start_Date_d1/DUGd01_06_10_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d1/hr11_17Z.txt
../MET_obs/ncobs/Start_Date_d1/DUGd01_06_11_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d1/hr12_18Z.txt
../MET_obs/ncobs/Start_Date_d1/DUGd01_06_12_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d1/hr13_19Z.txt
../MET_obs/ncobs/Start_Date_d1/DUGd01_06_13_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d1/hr14_20Z.txt
../MET_obs/ncobs/Start_Date_d1/DUGd01_06_14_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d1/hr15_21Z.txt
../MET_obs/ncobs/Start_Date_d1/DUGd01_06_15_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d1/hr16_22Z.txt
../MET_obs/ncobs/Start_Date_d1/DUGd01_06_16_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d1/hr17_23Z.txt
../MET_obs/ncobs/Start_Date_d1/DUGd01_06_17_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d1/hr18_00Z.txt
../MET_obs/ncobs/Start_Date_d1/DUGd01_06_18_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d1/hr19_01Z.txt
../MET_obs/ncobs/Start_Date_d1/DUGd01_06_19_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d1/hr20_02Z.txt
../MET_obs/ncobs/Start_Date_d1/DUGd01_06_20_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d1/hr21_03Z.txt
../MET_obs/ncobs/Start_Date_d1/DUGd01_06_21_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d1/hr22_04Z.txt
../MET_obs/ncobs/Start_Date_d1/DUGd01_06_22_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d1/hr23_05Z.txt
../MET_obs/ncobs/Start_Date_d1/DUGd01_06_23_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d1/hr24_06Z.txt
../MET_obs/ncobs/Start_Date_d1/DUGd01_06_24_as.nc -v 3
```

ascii2nc_DUGd01_06_all.sh

```
ascii2nc ../MET_obs/ncobs/20100621_d1/hr0_06Z.txt
../MET_obs/ncobs/20100621_d1/DUGd01_06_00_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20100621_d1/hr1_07Z.txt
../MET_obs/ncobs/20100621_d1/DUGd01_06_01_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20100621_d1/hr2_08Z.txt
../MET_obs/ncobs/20100621_d1/DUGd01_06_02_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20100621_d1/hr3_09Z.txt
../MET_obs/ncobs/20100621_d1/DUGd01_06_03_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20100621_d1/hr4_10Z.txt
../MET_obs/ncobs/20100621_d1/DUGd01_06_04_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20100621_d1/hr5_11Z.txt
../MET_obs/ncobs/20100621_d1/DUGd01_06_05_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20100621_d1/hr6_12Z.txt
../MET_obs/ncobs/20100621_d1/DUGd01_06_06_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20100621_d1/hr7_13Z.txt
../MET_obs/ncobs/20100621_d1/DUGd01_06_07_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20100621_d1/hr8_14Z.txt
../MET_obs/ncobs/20100621_d1/DUGd01_06_08_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20100621_d1/hr9_15Z.txt
../MET_obs/ncobs/20100621_d1/DUGd01_06_09_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20100621_d1/hr10_16Z.txt
../MET_obs/ncobs/20100621_d1/DUGd01_06_10_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20100621_d1/hr11_17Z.txt
../MET_obs/ncobs/20100621_d1/DUGd01_06_11_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20100621_d1/hr12_18Z.txt
../MET_obs/ncobs/20100621_d1/DUGd01_06_12_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20100621_d1/hr13_19Z.txt
../MET_obs/ncobs/20100621_d1/DUGd01_06_13_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20100621_d1/hr14_20Z.txt
../MET_obs/ncobs/20100621_d1/DUGd01_06_14_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20100621_d1/hr15_21Z.txt
../MET_obs/ncobs/20100621_d1/DUGd01_06_15_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20100621_d1/hr16_22Z.txt
../MET_obs/ncobs/20100621_d1/DUGd01_06_16_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20100621_d1/hr17_23Z.txt
../MET_obs/ncobs/20100621_d1/DUGd01_06_17_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20100621_d1/hr18_00Z.txt
../MET_obs/ncobs/20100621_d1/DUGd01_06_18_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20100621_d1/hr19_01Z.txt
../MET_obs/ncobs/20100621_d1/DUGd01_06_19_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20100621_d1/hr20_02Z.txt
../MET_obs/ncobs/20100621_d1/DUGd01_06_20_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20100621_d1/hr21_03Z.txt
../MET_obs/ncobs/20100621_d1/DUGd01_06_21_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20100621_d1/hr22_04Z.txt
../MET_obs/ncobs/20100621_d1/DUGd01_06_22_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20100621_d1/hr23_05Z.txt
../MET_obs/ncobs/20100621_d1/DUGd01_06_23_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20100621_d1/hr24_06Z.txt
../MET_obs/ncobs/20100621_d1/DUGd01_06_24_as.nc -v 3
```

ascii2nc_DUGd02_06_all_template

```
ascii2nc ../MET_obs/ncobs/Start_Date_d2/hr0_06Z.txt
../MET_obs/ncobs/Start_Date_d2/DUGd02_06_00_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d2/hr1_07Z.txt
../MET_obs/ncobs/Start_Date_d2/DUGd02_06_01_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d2/hr2_08Z.txt
../MET_obs/ncobs/Start_Date_d2/DUGd02_06_02_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d2/hr3_09Z.txt
../MET_obs/ncobs/Start_Date_d2/DUGd02_06_03_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d2/hr4_10Z.txt
../MET_obs/ncobs/Start_Date_d2/DUGd02_06_04_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d2/hr5_11Z.txt
../MET_obs/ncobs/Start_Date_d2/DUGd02_06_05_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d2/hr6_12Z.txt
../MET_obs/ncobs/Start_Date_d2/DUGd02_06_06_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d2/hr7_13Z.txt
../MET_obs/ncobs/Start_Date_d2/DUGd02_06_07_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d2/hr8_14Z.txt
../MET_obs/ncobs/Start_Date_d2/DUGd02_06_08_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d2/hr9_15Z.txt
../MET_obs/ncobs/Start_Date_d2/DUGd02_06_09_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d2/hr10_16Z.txt
../MET_obs/ncobs/Start_Date_d2/DUGd02_06_10_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d2/hr11_17Z.txt
../MET_obs/ncobs/Start_Date_d2/DUGd02_06_11_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d2/hr12_18Z.txt
../MET_obs/ncobs/Start_Date_d2/DUGd02_06_12_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d2/hr13_19Z.txt
../MET_obs/ncobs/Start_Date_d2/DUGd02_06_13_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d2/hr14_20Z.txt
../MET_obs/ncobs/Start_Date_d2/DUGd02_06_14_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d2/hr15_21Z.txt
../MET_obs/ncobs/Start_Date_d2/DUGd02_06_15_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d2/hr16_22Z.txt
../MET_obs/ncobs/Start_Date_d2/DUGd02_06_16_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d2/hr17_23Z.txt
../MET_obs/ncobs/Start_Date_d2/DUGd02_06_17_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d2/hr18_00Z.txt
../MET_obs/ncobs/Start_Date_d2/DUGd02_06_18_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d2/hr19_01Z.txt
../MET_obs/ncobs/Start_Date_d2/DUGd02_06_19_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d2/hr20_02Z.txt
../MET_obs/ncobs/Start_Date_d2/DUGd02_06_20_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d2/hr21_03Z.txt
../MET_obs/ncobs/Start_Date_d2/DUGd02_06_21_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d2/hr22_04Z.txt
../MET_obs/ncobs/Start_Date_d2/DUGd02_06_22_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d2/hr23_05Z.txt
../MET_obs/ncobs/Start_Date_d2/DUGd02_06_23_as.nc -v 3
ascii2nc ../MET_obs/ncobs/Start_Date_d2/hr24_06Z.txt
../MET_obs/ncobs/Start_Date_d2/DUGd02_06_24_as.nc -v 3
```

ascii2nc_DUGd02_06_all.sh

```
ascii2nc ../MET_obs/ncobs/20100621_d2/hr0_06Z.txt
../MET_obs/ncobs/20100621_d2/DUGd02_06_00_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20100621_d2/hr1_07Z.txt
../MET_obs/ncobs/20100621_d2/DUGd02_06_01_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20100621_d2/hr2_08Z.txt
../MET_obs/ncobs/20100621_d2/DUGd02_06_02_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20100621_d2/hr3_09Z.txt
../MET_obs/ncobs/20100621_d2/DUGd02_06_03_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20100621_d2/hr4_10Z.txt
../MET_obs/ncobs/20100621_d2/DUGd02_06_04_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20100621_d2/hr5_11Z.txt
../MET_obs/ncobs/20100621_d2/DUGd02_06_05_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20100621_d2/hr6_12Z.txt
../MET_obs/ncobs/20100621_d2/DUGd02_06_06_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20100621_d2/hr7_13Z.txt
../MET_obs/ncobs/20100621_d2/DUGd02_06_07_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20100621_d2/hr8_14Z.txt
../MET_obs/ncobs/20100621_d2/DUGd02_06_08_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20100621_d2/hr9_15Z.txt
../MET_obs/ncobs/20100621_d2/DUGd02_06_09_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20100621_d2/hr10_16Z.txt
../MET_obs/ncobs/20100621_d2/DUGd02_06_10_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20100621_d2/hr11_17Z.txt
../MET_obs/ncobs/20100621_d2/DUGd02_06_11_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20100621_d2/hr12_18Z.txt
../MET_obs/ncobs/20100621_d2/DUGd02_06_12_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20100621_d2/hr13_19Z.txt
../MET_obs/ncobs/20100621_d2/DUGd02_06_13_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20100621_d2/hr14_20Z.txt
../MET_obs/ncobs/20100621_d2/DUGd02_06_14_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20100621_d2/hr15_21Z.txt
../MET_obs/ncobs/20100621_d2/DUGd02_06_15_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20100621_d2/hr16_22Z.txt
../MET_obs/ncobs/20100621_d2/DUGd02_06_16_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20100621_d2/hr17_23Z.txt
../MET_obs/ncobs/20100621_d2/DUGd02_06_17_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20100621_d2/hr18_00Z.txt
../MET_obs/ncobs/20100621_d2/DUGd02_06_18_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20100621_d2/hr19_01Z.txt
../MET_obs/ncobs/20100621_d2/DUGd02_06_19_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20100621_d2/hr20_02Z.txt
../MET_obs/ncobs/20100621_d2/DUGd02_06_20_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20100621_d2/hr21_03Z.txt
../MET_obs/ncobs/20100621_d2/DUGd02_06_21_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20100621_d2/hr22_04Z.txt
../MET_obs/ncobs/20100621_d2/DUGd02_06_22_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20100621_d2/hr23_05Z.txt
../MET_obs/ncobs/20100621_d2/DUGd02_06_23_as.nc -v 3
ascii2nc ../MET_obs/ncobs/20100621_d2/hr24_06Z.txt
../MET_obs/ncobs/20100621_d2/DUGd02_06_24_as.nc -v 3
```

INTENTIONALLY LEFT BLANK

Appendix E. Embedded Scripts: WRF Post-Processing (MJM, Carson)

Create_Passner_Directories

```
#
# Script Purpose: Create the directories for the post process Passner WRF
runs given a start date
# Author: Yasmina R. Raby
# Date: 06/22/2010
# Script Name: Create_Passner_Directories
# Script Location: Scripts directory on carson
# Calling Script: s
# Scripts Called: None
# Enter Start Date of WRF run

echo "  "
echo "  "
echo "Enter Start_Date (YYYYmmdd) of the completed WRF run"
read Start_Date

echo $Start_Date
echo " "

cd ~jraby/MET_WRFpostprd/

mkdir $Start_Date
mkdir $Start_Date"_P2"
mkdir $Start_Date"_P8"
mkdir $Start_Date"_T3"
mkdir $Start_Date"_L4"
mkdir $Start_Date"_L8"
mkdir $Start_Date"_B2"
```

WRF_Post_Process

```
#
# Script Purpose: This script Conducts Post Processing on WRF run
# Author: Robert C. Brown
# Date: 01/29/2010
# Script Name: WRF_Post_Process
# Script Location: mjm scripts directory, jraby account
# Calling Script: s
# Scripts Called: run_wrfpost_frames_template
# Enter Start Date of WRF run

echo "  "
echo "  "
echo "Enter Start_Date (YYYYmmdd) of the completed WRF run"
read Start_Date

echo $Start_Date
echo " "

cd ~jraby/WRFOUT

mkdir $Start_Date

cd $Start_Date

# ../setsubs.sh
# Following is from Barb's  ../setsubs.sh
mkdir wrfprd
mkdir parm
mkdir postprd

mv ~jraby/WRF3011/run/wrfout* ./wrfprd/.
cp ../wrf_cntrl.parm ./parm/.
cp ../run_wrfpost_frames_template ./postprd/run_wrfpost_frames
# End of  ../setsubs.sh

# cp ../run_wrfpost_frames_template ./postprd/run_wrfpost_frames_tmplate
cp ../run_wrfpost_frames_template ./postprd/
cd postprd
sed
s/Start_Date/${Start_Date}/g<run_wrfpost_frames_template>run_wrfpost_frame
s

run_wrfpost_frames

# scp WRFPRS* jraby@carson:MET_WRFpostprd/$Start_Date
```

run_wrfpost_frames_template

```
#!/bin/ksh
#
set -x

# Script Purpose and Author:
# August 2005: Hui-Ya Chuang, NCEP: This script uses
# NCEP's WRF-POSTPROC to post processes WRF native model
# output, and uses copygb to horizontally interpolate posted
# output from native A-E to a regular projection grid.
#
# July 2006: Meral Demirtas, NCAR/DTC: Added new "copygb"
# options and revised some parts for clarity.
#
#--------------------------------------------------------
# This script performs 2 jobs:
#
# 1. Run WRF-POSTPROC
# 2. Run copygb to horizontally interpolate output from
#    native A-E to a regular projection grid
#--------------------------------------------------------
# Date: 01/29/2010 (this version)
# Script Name: run_wrfpost_frames_template
# Script Location: mjm WRFOUT directory, jraby account
# Calling Script: WRF_Post_Process
# Scripts Called:
# Set path to your top directory and your run directory
#

export TOP_DIR=/usr/people/jraby
export DOMAINPATH=${TOP_DIR}/WRFOUT/Start_Date

#Specify Dyn Core (ARW or NMM in upper case)
dyncore="ARW"

if [ $dyncore = "NMM" ]; then
   export tag=NMM
elif [ $dyncore = "ARW" ]; then
   export tag=NCAR
else
    echo "${dyncore} is not supported. Edit script to choose ARW or NMM
dyncore."
    exit
fi



# Specify forecast start date
# fhr is the first forecast hour to be post-processed
# lastfhr is the last forecast hour to be post-processed
# incrementhr is the incement (in hours) between forecast files

export startdate=Start_Date06
```

```
export fhr=00
export lastfhr=24
export incrementhr=01

# Path names for WRF_POSTPROC and WRFV3

export WRF_POSTPROC_HOME=${TOP_DIR}/WPPV3
export POSTEXEC=${WRF_POSTPROC_HOME}/exec
export SCRIPTS=${WRF_POSTPROC_HOME}/scripts
export WRFPATH=${TOP_DIR}/WRF3011

# cd to working directory
cd ${DOMAINPATH}/postprd

# Link Ferrier's microphysic's table and WRF-POSTPROC control file,

ln -fs ${WRFPATH}/run/ETAMPNEW_DATA eta_micro_lookup.dat
ln -fs ${DOMAINPATH}/parm/wrf_cntrl.parm .

export tmmark=tm00
export MP_SHARED_MEMORY=yes
export MP_LABELIO=yes

#######################################################
# 1. Run WRF-POSTPROC
#
# The WRF-POSTPROC is used to read native WRF model
# output and put out isobaric state fields and derived fields.
#
#######################################################

pwd
ls -x

export NEWDATE=$startdate

YYi=`echo $NEWDATE | cut -c1-4`
MMi=`echo $NEWDATE | cut -c5-6`
DDi=`echo $NEWDATE | cut -c7-8`
HHi=`echo $NEWDATE | cut -c9-10`

while [ $fhr -le $lastfhr ] ; do

NEWDATE=`${POSTEXEC}/ndate.exe +${fhr} $startdate`

YY=`echo $NEWDATE | cut -c1-4`
MM=`echo $NEWDATE | cut -c5-6`
DD=`echo $NEWDATE | cut -c7-8`
HH=`echo $NEWDATE | cut -c9-10`

echo 'NEWDATE' $NEWDATE
echo 'YY' $YY
```

```
for domain in d01 d02
#for domain in d01
do

cat > itag <<EOF
../wrfprd/wrfout_${domain}_${YYi}-${MMi}-${DDi}_${HHi}:00:00
netcdf
${YY}-${MM}-${DD}_${HH}:00:00
${tag}
EOF

#-----------------------------------------------------------------------
#   Run wrfpost.
#-----------------------------------------------------------------------
rm fort.*

ln -sf wrf_cntrl.parm fort.14
ln -sf griddef.out fort.110
${POSTEXEC}/wrfpost.exe < itag >  wrfpost_${domain}.$fhr.out 2>&1

mv WRFPRS$fhr.tm00 WRFPRS_${domain}.${fhr}

#
#----------------------------------------------------------------------
#   End of wrf post job
#----------------------------------------------------------------------

ls -l WRFPRS_${domain}.${fhr}
err1=$?

if test "$err1" -ne 0
then

echo 'WRF POST FAILED, EXITTING'
exit

fi

if [ $dyncore = "NMM" ]; then



#######################################################################
# 2. Run copygb
#
# Copygb interpolates WRF-POSTPROC output from its native
# grid to a regular projection grid. The package copygb
# is used to horizontally interpolate from one domain
# to another, it is necessary to run this step for wrf-nmm
# (but not for wrf-arw) because wrf-nmm's computational
# domain is on rotated Arakawa-E grid
#
# Copygb can be run in 3 ways as explained below.
# Uncomment the preferable one.
```

```
#
#------------------------------------------------------------------------
#
# Option 1:
# Copygb is run with a pre-defined AWIPS grid
# (variable $gridno, see below) Specify the grid to
# interpolate the forecast onto. To use standard AWIPS grids
# (list in  http://wwwt.emc.ncep.noaa.gov/mmb/namgrids/ or
# or http://www.nco.ncep.noaa.gov/pmb/docs/on388/tableb.html),
# set the number of the grid in variable gridno below.
# To use a user defined grid, see explanation above copygb.exe command.
#
#export gridno=212
#
#${POSTEXEC}/copygb.exe -xg${gridno} WRFPRS_${domain}.${fhr}
wrfprs_${domain}.${fhr}
#
#------------------------------------------------------------------------
#
#  Option 2:
#  Copygb ingests a kgds definition on the command line.
#${POSTEXEC}/copygb.exe -xg"255 3 109 91 37748 -77613 8 -71000 10379 9900
0 64 42000 42000" WRFPRS_${domain}.${fhr} wrfprs_${domain}.${fhr}
#
#------------------------------------------------------------------------
#
#  Option 3:
#  Copygb can ingests contents of files too. For example:
#     copygb_gridnav.txt or copygb_hwrf.txt through variable $nav.
#
#  Option -3.1:
#    To run for "Lambert Comformal map projection" uncomment the following
line
#
 read nav < 'copygb_gridnav.txt'
#
#  Option -3.2:
#    To run for "lat-lon" uncomment the following line
#
#read nav < 'copygb_hwrf.txt'
#
export nav
#
${POSTEXEC}/copygb.exe -xg"${nav}" WRFPRS_${domain}.${fhr}
wrfprs_${domain}.${fhr}
#
# (For more info on "copygb" see WRF-NMM User's Guide, Chapter-7.)
#------------------------------------------------------------------------

# Check to see whether "copygb" created the requested file.

ls -l wrfprs_${domain}.${fhr}
err1=$?
```

```
if test "$err1" -ne 0
then

echo 'copygb FAILED, EXITTING'
exit

fi

#----------------------------------------------------------------------
#   End of copygb job
#----------------------------------------------------------------------

elif [ $dyncore = "ARW" ]; then
    ln -s WRFPRS_${domain}.${fhr} wrfprs_${domain}.${fhr}
fi

done

let "fhr=fhr+$incrementhr"

typeset -Z2 fhr

NEWDATE=`${POSTEXEC}/ndate.exe +${fhr} $startdate`

done

date
echo "End of Output Job"
exit
```

post_carson

```
# Script Purpose: Downloads post-processed data to carson
# Author: Robert C. Brown
# Date: 01/29/2010
# Script Name: post_carson
# Script Location: mjm Scripts directory, jraby account
# Calling Script: s1
# Scripts Called:
echo " "
echo " "
echo "Enter Start_Date (YYYYmmdd) of the completed WRF run"
read Start_Date
echo $Start_Date
cd ~jraby/WRFOUT
cd $Start_Date
cd postprd
echo " "
echo "Downloading post-processed data to carson"
scp WRFPRS* jraby@carson:MET_WRFpostprd/$Start_Date
```

post_carson_control

```
# Script Purpose: Downloads Passner post-processed data for WRF control
run to carson
# Author: Brown/Raby
# Date: 06/18/2010
# Script Name: post_carson_control
# Script Location: mjm Scripts directory, jraby account
# Calling Script: s2
# Scripts Called:
echo " "
echo " "
echo "Enter Start_Date (YYYYmmdd) of the completed WRF control run"
read Start_Date
echo $Start_Date
cd ~jraby/WRFOUT
cd $Start_Date
cd postprd
echo " "
echo "Downloading post-processed control data to carson"
scp WRFPRS* jraby@carson:MET_WRFpostprd/$Start_Date
```

post_carson_p2

```
# Script Purpose: Downloads Passner post-processed data for WRF P2 run to
carson
# Author: Brown/Raby
# Date: 06/18/2010
# Script Name: post_carson_P2
# Script Location: mjm Scripts directory, jraby account
# Calling Script: s2
# Scripts Called:
echo " "
echo " "
echo "Enter Start_Date (YYYYmmdd) of the completed WRF P2 run"
read Start_Date
echo $Start_Date
cd ~jraby/WRFOUT
cd $Start_Date
cd postprd
echo " "
echo "Downloading post-processed P2 data to carson"
scp WRFPRS* jraby@carson:MET_WRFpostprd/$Start_Date"_P2"
```

post_carson_p8

```
# Script Purpose: Downloads Passner post-processed data for WRF P8 run to
carson
# Author: Brown/J.Raby/Y.Raby
# Date: 06/18/2010
# Script Name: post_carson_P8
# Script Location: mjm Scripts directory, jraby account
# Calling Script: s2
# Scripts Called:
echo " "
echo " "
echo "Enter Start_Date (YYYYmmdd) of the completed WRF P8 run"
read Start_Date
echo $Start_Date
cd ~jraby/WRFOUT
cd $Start_Date
cd postprd
echo " "
echo "Downloading post-processed P8 data to carson"
scp WRFPRS* jraby@carson:MET_WRFpostprd/$Start_Date"_P8"
```

post_carson_T3

```
# Script Purpose: Downloads Passner post-processed data for WRF T3 run to
carson
# Author: Brown/J.Raby/Y.Raby
# Date: 06/21/2010
# Script Name: post_carson_T3
# Script Location: mjm Scripts directory, jraby account
# Calling Script: s2
# Scripts Called:
echo " "
echo " "
echo "Enter Start_Date (YYYYmmdd) of the completed WRF T3 run"
read Start_Date
echo $Start_Date
cd ~jraby/WRFOUT
cd $Start_Date
cd postprd
echo " "
echo "Downloading post-processed T3 data to carson"
scp WRFPRS* jraby@carson:MET_WRFpostprd/$Start_Date"_T3"
```

post_carson_L4

```
# Script Purpose: Downloads Passner post-processed data for WRF L4 run to
carson
# Author: Brown/J.Raby/Y.Raby
# Date: 06/21/2010
# Script Name: post_carson_L4
# Script Location: mjm Scripts directory, jraby account
# Calling Script: s2
# Scripts Called:
echo " "
echo " "
echo "Enter Start_Date (YYYYmmdd) of the completed WRF L4 run"
read Start_Date
echo $Start_Date
cd ~jraby/WRFOUT
cd $Start_Date
cd postprd
echo " "
echo "Downloading post-processed L4 data to carson"
scp WRFPRS* jraby@carson:MET_WRFpostprd/$Start_Date"_L4"
```

post_carson_L8

```
# Script Purpose: Downloads Passner post-processed data for WRF L8 run to
carson
# Author: Brown/J.Raby/Y.Raby
# Date: 06/21/2010
# Script Name: post_carson_L8
# Script Location: mjm Scripts directory, jraby account
# Calling Script: s2
# Scripts Called:
echo " "
echo " "
echo "Enter Start_Date (YYYYmmdd) of the completed WRF L8 run"
read Start_Date
echo $Start_Date
cd ~jraby/WRFOUT
cd $Start_Date
cd postprd
echo " "
echo "Downloading post-processed L8 data to carson"
scp WRFPRS* jraby@carson:MET_WRFpostprd/$Start_Date"_L8"
```

post_carson_B2

```
# Script Purpose: Downloads Passner post-processed data for WRF B2 run to
carson
# Author: Brown/J.Raby/Y.Raby
# Date: 06/21/2010
# Script Name: post_carson_B2
# Script Location: mjm Scripts directory, jraby account
# Calling Script: s2
# Scripts Called:
echo " "
echo " "
echo "Enter Start_Date (YYYYmmdd) of the completed WRF B2 run"
read Start_Date
echo $Start_Date
cd ~jraby/WRFOUT
cd $Start_Date
cd postprd
echo " "
echo "Downloading post-processed B2 data to carson"
scp WRFPRS* jraby@carson:MET_WRFpostprd/$Start_Date"_B2"
```

Appendix F. Embedded Scripts: MET Point-Stat (Carson)

run_Point_Stat

```
# Script Purpose: To run run_PointStat_Passner for PointStat output for
Passner's
#           WRF runs
# Author: Yasmina R. Raby
# Date: 08/18/2010
# Script Name: run_Point_Stat
# Script Location: ~jraby/Scripts on carson
# Scripts Called: ~jraby/Scripts/run_PointStat_Passner.sh on carson
# Input:
#     Observations are expected to be in ~jraby/MET_obs/ncobs/ on carson
#     Config files are expected to be in ~jraby/MET_PointStat/ on carson
#     Post processed WRF files are expected to be in ~jraby/MET_WRFpostprd
#     on carson
# Output: ~jraby/MET_PointStat/results_(resolution/domain)_(variation)

cd ~jraby/MET_PointStat

echo " "

echo "Enter Start_Date (YYYYmmdd) of the completed WRF run"
read Start_Date
echo "Enter WRF run variation (P2, P8, T3, L4, L8, B2, control)"
read variation
echo "Enter domain/resolution (m1o1, m1o2, m2o2, all)"
read domainResolution

if [ "$variation" != "control" ]
      then
            var="_"$variation
      else
            var=""
fi

if [ $domainResolution == 'all' ]
      then
            echo "Running Point_Stat for all three domain/resolutions"
            echo "Running Point_Stat for $Start_Date "m1o1" $variation "
            run_PointStat_Passner.sh $Start_Date $variation m1o1 >&
"logs/"$Start_Date"_m1o1_"$variation"_log"
            echo "Running Point_Stat for $Start_Date "m1o2" $variation "
            run_PointStat_Passner.sh $Start_Date $variation m1o2 >&
"logs/"$Start_Date"_m1o2_"$variation"_log"
            echo "Running Point_Stat for $Start_Date "m2o2" $variation "
            run_PointStat_Passner.sh $Start_Date $variation m2o2 >&
"logs/"$Start_Date"_m2o2_"$variation"_log"

            echo "run_Point_Stat Complete"

            echo "Point_Stat result files:
            results_m1o1${var}/${Start_Date},
            results_m1o2${var}/${Start_Date},
            results_m2o2${var}/${Start_Date}"
```

```
            echo "Point_Stat log files:
logs/"$Start_Date"_m1o1_"$variation"_log,
logs/"$Start_Date"_m1o2_"$variation"_log,
logs/"$Start_Date"_m2o2_"$variation"_log"
      else
            echo "Running Point_Stat"
            run_PointStat_Passner.sh $Start_Date $variation
$domainResolution >&
"logs/"$Start_Date"_"$domainResolution"_"$variation"_log"
            echo "run_Point_Stat Complete"

            echo "Point_Stat result files:
            results_${domainResolution}${var}/${Start_Date}"

            echo "Point_Stat log file:
logs/"$Start_Date"_"$domainResolution"_"$variation"_log"

fi
```

Run_PointStat_Passner.sh

```
# Script Purpose: To generate PointStat output for Passner's WRF runs
# Author: Yasmina R. Raby modified by J. Raby 01/11/11 to chg DUG to KSC
for FL data
# Date: 07/06/2010
# Script Name: run_PointStat_Passner
# Script Location: ~jraby/Scripts on carson
# Script Called By: ~jraby/Scripts/run_Point_Stat
# Input:
#     Observations are expected to be in ~jraby/MET_obs/ncobs/ on carson
#     Config files are expected to be in ~jraby/MET_PointStat/ on carson
#     Post processed WRF files are expected to be in ~jraby/MET_WRFpostprd
#     on carson
# Output: ~jraby/MET_PointStat/results_(resolution/domain)_(variation)

echo "run_PointStat_Passner is running"
Start_Date=$1
variation=$2
domainResolution=$3
echo "Start Date:" $Start_Date
echo "Variation:" $variation
echo "Domain/resolution:" $domainResolution

#If it is NOT a control run, then add an underbar to the WRF variation
type for the
#directories below.
if [ "$variation" != "control" ]
      then
            var="_"$variation
      else
            var=""
fi

# If statement - if domain is m1o1, set to d1, otherwise, we know that
m1o2
# and m2o2 will result in d2
# Note: The same essential directory is used for the observations, except
that it
# either uses prep buffer (_pb.nc) or madis (_as.nc) at the end. Also if
it is
# _as.nc, note that its directory is $Start_Date_d1 or d2, depending on
the domain.

if  [ "$domainResolution" == "m1o1" ]
      then
            obsDir=" ../MET_obs/ncobs/"$Start_Date"/KSCd01_06_"
            obsDir2=" ../MET_obs/ncobs/"$Start_Date"_d1/KSCd01_06_"
            domain="d01"
            firstObs="_pb.nc"
            secondObs="_as.nc"     #Note that when _as.ns is the
extention, the
                             #domain appears on the end of the start date
```

```
            # If it is the control case, we want to add a pb on the end of
the
            # config file.
            if [ "$var" == "" ]
                  then
                        controlConfig="pb"
            fi
            configFile="./PointStatConfig_m1o1"$controlConfig$var" -
ncfile"
      else
            obsDir2=" ../MET_obs/ncobs/"$Start_Date"/KSCd02_06_"
            obsDir=" ../MET_obs/ncobs/"$Start_Date"_d2/KSCd02_06_"

            if  [ "$domainResolution" == "m2o2" ]
                  then
                        # NOTE: This actually refers to the resolution,
                        # and not the 'area' domain.
                        domain="d02"
                  else
                        domain="d01"
            fi
            firstObs="_as.nc"
            secondObs="_pb.nc"
            # If it is the control case, we want to add an as on the end
of the
            # config file
            if [ "$var" == "" ]
                  then
                        controlConfig="as"
            fi

      configFile="./PointStatConfig_"$domainResolution$controlConfig$var"
-ncfile"
fi

#Begin generation
mkdir -p ./results_$domainResolution$var/$Start_Date
echo "Running Point_Stat"

#For loop: Doing the statement 25 times (00-24)
for i in 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21
22 23 24
do
      echo "Hour" $i
      #This is the line that gets repeated 25 times.
      point_stat ../MET_WRFpostprd/$Start_Date$var/WRFPRS_$domain.$i
$obsDir$i$firstObs $configFile $obsDir2$i$secondObs -outdir
./results_$domainResolution$var/$Start_Date -v 2
done

echo "run_PointStat_Passner Completed"
```

PointStatConfig_m1o1pb

```
////////////////////////////////////////////////////////////////////////////
//////
//
// Point_Stat configuration file for any location for Passner control case
// for 3 km model output compared to PrepBUFR (metar and upper air) and
MADIS (mesonet) obs in domain 01
//
////////////////////////////////////////////////////////////////////////////
//////

//
// Specify a name to designate the model being verified.  This name will
be
// written to the second column of the ASCII output generated.
//
model = "WRF";

//
// Beginning and ending time offset values in seconds for observations
// to be used.  These time offsets are defined in reference to the
// forecast valid time, v.  Observations with a valid time falling in the
// window [v+beg_ds, v+end_ds] will be used.
// These selections are overridden by the command line arguments
// -valid_beg and -valid_end.
//
beg_ds = -1200;
end_ds =  1200;


//
// Specify a comma-separated list of fields to be verified.  Each field is
// specified as a grib code or corresponding grib code abbreviation
followed
// by an accumulation or vertical level indicator.
//
// Each verification field is specified as one of the following:
//    GC/ANNN for accumulation interval NNN
//    GC/ZNNN for vertical level NNN (may only be set to 0, 2, or 10)
//    GC/PNNN for pressure level NNN in hPa
//    GC/PNNN-NNN for a range of pressure levels in hPa
//    GC/LNNN for a generic level type
//    GC/RNNN for a specific GRIB record number
//    Where GC is the number of or abbreviation for the grib code
//    to be verified.
// http://www.nco.ncep.noaa.gov/pmb/docs/on388/table2.html
//
//    NOTE: To verify winds as vectors rather than scalars,
//          specify UGRD (or 33) followd by VGRD (or 34) with the
//          same level values.
//
//    NOTE: To process a probability field, add "/PROB", such as
"POP/Z0/PROB".
```

```
//
// e.g. fcst_field[] = [ "SPFH/P500", "TMP/P500" ];
//
fcst_field[] = [ "TMP/P100-225", "TMP/P225-425", "TMP/P425-625",
"TMP/P625-775", "TMP/P775-875", "TMP/P875-910", "TMP/P910-1010",
"HGT/P100-225", "HGT/P225-425", "HGT/P425-625", "HGT/P625-775", "HGT/P775-
875", "HGT/P875-910", "HGT/P910-1010", "UGRD/P100-225", "VGRD/P100-225",
"UGRD/P225-425", "VGRD/P225-425", "UGRD/P425-625", "VGRD/P425-625",
"UGRD/P625-775", "VGRD/P625-775", "UGRD/P775-875", "VGRD/P775-875",
"UGRD/P875-910", "VGRD/P875-910", "UGRD/P910-1010", "VGRD/P910-1010",
"DPT/P100-225", "DPT/P225-425", "DPT/P425-625", "DPT/P625-775", "DPT/P775-
875", "DPT/P875-910", "DPT/P910-1010", "WIND/P100-225", "WIND/P225-425",
"WIND/P425-625", "WIND/P625-775", "WIND/P775-875", "WIND/P875-910",
"WIND/P910-1010", "RH/P100-225", "RH/P225-425", "RH/P425-625", "RH/P625-
775", "RH/P775-875", "RH/P875-910", "RH/P910-1010", "TMP/Z2", "UGRD/Z10",
"VGRD/Z10", "DPT/Z2", "WIND/Z10", "RH/Z2", "PRMSL/Z0" ];
obs_field[] = [];

//
// Specify a comma-separated list of groups of thresholds to be applied to
the
// fields listed above.  Thresholds for the forecast and observation
fields
// may be specified separately.  If the obs_thresh parameter is left
blank,
// it will default to the contents of fcst_thresh.
//
// At least one threshold must be provided for each field listed above.
The
// lengths of the "fcst_field" and "fcst_thresh" arrays must match, as
must
// lengths of the "obs_field" and "obs_thresh" arrays.  To apply multiple
// thresholds to a field, separate the threshold values with a space.
//
// Each threshold must be preceded by a two letter indicator for the type
of
// thresholding to be performed:
//    'lt' for less than     'le' for less than or equal to
//    'eq' for equal to      'ne' for not equal to
//    'gt' for greater than  'ge' for greater than or equal to
//
// NOTE: Thresholds for probabilities must be preceeded by "ge".
//
// e.g. fcst_thresh[] = [ "gt80", "gt273" ];
//
fcst_thresh[] = [ "gt273", "gt273", "gt273", "gt273", "gt273", "gt273",
"gt273", "gt14000", "gt8000", "gt4000", "gt2000", "gt1000", "gt500",
"gt500", "gt10", "gt5", "gt10", "gt5", "gt5", "gt5", "gt5", "gt5", "gt5",
"gt5", "gt5", "gt5", "gt5", "gt5", "gt273", "gt273", "gt273", "gt273",
"gt273", "gt273", "gt273", "gt20", "gt20", "gt10", "gt10", "gt10", "gt5",
"gt5", "gt20", "gt20", "gt20", "gt30", "gt30", "gt30", "gt30", "gt273",
"gt2", "gt2", "gt273", "gt5", "gt50", "gt1000" ];
obs_thresh[] = [];
```

```
//
// Specify a comma-separated list of thresholds to be used when computing
// VL1L2 and VAL1L2 partial sums for winds.  The thresholds are applied to
the
// wind speed values derived from each U/V pair.  Only those U/V pairs
which meet
// the wind speed threshold criteria are retained.  If the obs_wind_thresh
// parameter is left blank, it will default to the contents of
fcst_wind_thresh.
//
// To apply multiple wind speed thresholds, separate the threshold values
with a
// space.  Use "NA" to indicate that no wind speed threshold should be
applied.
//
// Each threshold must be preceded by a two letter indicator for the type
of
// thresholding to be performed:
//    'lt' for less than     'le' for less than or equal to
//    'eq' for equal to      'ne' for not equal to
//    'gt' for greater than  'ge' for greater than or equal to
//    'NA' for no threshold
//
// e.g. fcst_wind_thresh[] = [ "NA", "ge1.0" ];
//
fcst_wind_thresh[] = [ "NA" ];
obs_wind_thresh[]  = [ "ge1.0" ];

//
// Specify a comma-separated list of PrepBufr message types with which
// to perform the verification.  Statistics will be computed separately
// for each message type specified.  At least one PrepBufr message type
// must be provided.
// List of valid message types:
//    ADPUPA AIRCAR AIRCFT ADPSFC ERS1DA GOESND GPSIPW
//    MSONET PROFLR QKSWND RASSDA SATEMP SATWND SFCBOG
//    SFCSHP SPSSMI SYNDAT VADWND
//    ANYAIR (= AIRCAR, AIRCFT)
//    ANYSFC (= ADPSFC, SFCSHP, ADPUPA, PROFLR)
//    ONLYSF (= ADPSFC, SFCSHP)
//
http://www.emc.ncep.noaa.gov/mmb/data_processing/prepbufr.doc/table_1.htm
//
// e.g. message_type[] = [ "ADPUPA", "AIRCAR" ];
//
message_type[] = [ "ADPUPA", "AIRCAR", "AIRCFT", "ADPSFC" ];

//
// Specify a comma-separated list of grids to be used in masking the data
over
// which to perform scoring.  An empty list indicates that no masking grid
// should be performed.  The standard NCEP grids are named "GNNN" where
NNN
// indicates the three digit grid number.  Enter "FULL" to score over the
```

```
// entire domain.
// http://www.nco.ncep.noaa.gov/pmb/docs/on388/tableb.html
//
// e.g. mask_grid[] = [ "FULL" ];
//
mask_grid[] = [ "FULL" ];

//
// Specify a comma-separated list of masking regions to be applied.
// An empty list indicates that no additional masks should be used.
// The masking regions may be defined in one of 4 ways:
//
// (1) An ASCII file containing a lat/lon polygon.
//     Latitude in degrees north and longitude in degrees east.
//     By default, the first and last polygon points are connected.
//     e.g. "MET_BASE/data/poly/EAST.poly" which consists of n points:
//          "poly_name lat1 lon1 lat2 lon2... latn lonn"
//
// (2) The NetCDF output of the gen_poly_mask tool.
//
// (3) A NetCDF data file, followed by the name of the NetCDF variable
//     to be used, and optionally, a threshold to be applied to the field.
//     e.g. "sample.nc var_name gt0.00"
//
// (4) A GRIB data file, followed by a description of the field
//     to be used, and optionally, a threshold to be applied to the field.
//     e.g. "sample.grb APCP/A3 gt0.00"
//
// Any NetCDF or GRIB file used must have the same grid dimensions as the
// data being verified.
//
// MET_BASE may be used in the path for the files above.
//
// e.g. mask_poly[] = [ "MET_BASE/data/poly/EAST.poly",
//                      "poly_mask.ncf",
//                      "sample.nc APCP",
//                      "sample.grb HGT/Z0 gt100.0" ];
//
mask_poly[] = [];

//
// Specify the name of an ASCII file containing a space-separated list of
// station ID's at which to perform verification.  Each station ID
specified
// is treated as an individual masking region.
//
// An empty list file name indicates that no station ID masks should be
used.
//
// MET_BASE may be used in the path for the station ID mask file name.
//
// e.g. mask_sid = "MET_BASE/data/stations/CONUS.stations";
//
mask_sid = "";
```

```
//
// Specify a comma-separated list of values for alpha to be used when
computing
// confidence intervals.  Values of alpha must be between 0 and 1.
//
// e.g. ci_alpha[] = [ 0.05, 0.10 ];
//
ci_alpha[] = [ 0.05 ];

//
// Specify the method to be used for computing bootstrap confidence
intervals.
// The value for this is interpreted as follows:
//    (0) Use the BCa interval method (computationally intensive)
//    (1) Use the percentile interval method
//
boot_interval = 1;

//
// Specify a proportion between 0 and 1 to define the replicate sample
size
// to be used when computing percentile intervals.  The replicate sample
// size is set to boot_rep_prop * n, where n is the number of raw data
points.
//
// e.g boot_rep_prop = 0.80;
//
boot_rep_prop = 1.0;

//
// Specify the number of times each set of matched pair data should be
// resampled when computing bootstrap confidence intervals.  A value of
// zero disables the computation of bootstrap condifence intervals.
//
// e.g. n_boot_rep = 1000;
//
n_boot_rep = 0;

//
// Specify the name of the random number generator to be used.  See the
MET
// Users Guide for a list of possible random number generators.
//
boot_rng = "mt19937";

//
// Specify the seed value to be used when computing bootstrap confidence
// intervals.  If left unspecified, the seed will change for each run and
// the computed bootstrap confidence intervals will not be reproducable.
//
boot_seed = "";

//
```

```
// Specify a comma-separated list of interpolation method(s) to be used
// for comparing the forecast grid to the observation points.  String
values
// are interpreted as follows:
//    MIN     = Minimum in the neighborhood
//    MAX     = Maximum in the neighborhood
//    MEDIAN  = Median in the neighborhood
//    UW_MEAN = Unweighted mean in the neighborhood
//    DW_MEAN = Distance-weighted mean in the neighborhood
//    LS_FIT  = Least-squares fit in the neighborhood
//
// In all cases, vertical interpolation is performed in the natural log
// of pressure of the levels above and below the observation.
//
// e.g. interp_method[] = [ "UW_MEAN", "MEDIAN" ];
//
interp_method[] = [ "DW_MEAN" ];

//
// Specify a comma-separated list of box widths to be used by the
// interpolation techniques listed above.  A value of 1 indicates that
// the nearest neighbor approach should be used.  For a value of n
// greater than 1, the n*n grid points closest to the observation define
// the neighborhood.
//
// e.g. interp_width = [ 1, 3, 5 ];
//
interp_width[] = [ 2 ];

//
// When interpolating, compute a ratio of the number of valid data points
// to the total number of points in the neighborhood.  If that ratio is
// less than this threshold, do not include the observation.  This
// threshold must be between 0 and 1.  Setting this threshold to 1 will
// require that each observation be surrounded by n*n valid forecast
// points.
//
// e.g. interp_thresh = 1.0;
//
interp_thresh = 1.0;

//
// Specify flags to indicate the type of data to be output:
//    (1) STAT and FHO Text Files, FHO rates:
//           Total (TOTAL),
//           Forecast Rate (F_RATE),
//           Hit Rate (H_RATE),
//           Observation Rate (O_RATE)
//
//    (2) STAT and CTC Text Files, Contingency Table Counts:
//           Total (TOTAL),
//           Forecast Yes and Observation Yes Count (FY_OY),
//           Forecast Yes and Observation No Count (FY_ON),
//           Forecast No and Observation Yes Count (FN_OY),
```

```
//           Forecast No and Observation No Count (FN_ON)
//
//     (3) STAT and CTS Text Files, Contingency Table Scores:
//           Total (TOTAL),
//           Base Rate (BASER), BASER_CL, BASER_CU,
//           Forecast Mean (FMEAN), FMEAN_CL, FMEAN_CU,
//           Accuracy (ACC), ACC_CL, ACC_CU,
//           Frequency Bias (FBIAS),
//           Probability of Detecting Yes (PODY), PODY_CL, PODY_CU,
//           Probability of Detecting No (PODN), PODN_CL, PODN_CU,
//           Probability of False Detection (POFD), POFD_CL, POFD_CU,
//           False Alarm Ratio (FAR), FAR_CL, FAR_CU,
//           Critical Success Index (CSI), CSI_CL, CSI_CU,
//           Gilbert Skill Score (GSS),
//           Hanssen and Kuipers Discriminant (HK), HK_CL, HK_CU,
//           Heidke Skill Score (HSS),
//           Odds Ratio (ODDS), ODDS_CL, ODDS_CU
//
//     (4) STAT and CNT Text Files, Statistics of Continuous Variables:
//           Total (TOTAL),
//           Forecast Mean (FBAR), FBAR_CL, FBAR_CU,
//           Forecast Standard Deviation (FSTDEV), FSTDEV_CL, FSTDEV_CU
//           Observation Mean (OBAR), OBAR_CL, OBAR_CU,
//           Observation Standard Deviation (OSTDEV), OSTDEV_CL,
OSTDEV_CU,
//           Pearson's Correlation Coefficient (PR_CORR), PR_CORR_CL,
PR_CORR_CU,
//           Spearman's Rank Correlation Coefficient (SP_CORR),
//           Kendall Tau Rank Correlation Coefficient (KT_CORR),
//           Number of ranks compared (RANKS),
//           Number of tied ranks in the forecast field (FRANK_TIES),
//           Number of tied ranks in the observation field (ORANK_TIES),
//           Mean Error (ME), ME_CL, ME_CU,
//           Standard Deviation of the Error (ESTDEV), ESTDEV_CL,
ESTDEV_CU,
//           Bias (BIAS = FBAR - OBAR),
//           Mean Absolute Error (MAE),
//           Mean Squared Error (MSE),
//           Bias-Corrected Mean Squared Error (BCMSE),
//           Root Mean Squared Error (RMSE),
//           Percentiles of the Error (E10, E25, E50, E75, E90)
//
//           NOTE: CL and CU values define lower and upper
//                 confidence interval limits.
//
//     (5) STAT and SL1L2 Text Files, Scalar Partial Sums:
//           Total (TOTAL),
//           Forecast Mean (FBAR),
//              = mean(f)
//           Observation Mean (OBAR),
//              = mean(o)
//           Forecast*Observation Product Mean (FOBAR),
//              = mean(f*o)
//           Forecast Squared Mean (FFBAR),
```

```
//              = mean(f^2)
//           Observation Squared Mean (OOBAR)
//              = mean(o^2)
//
//    (6) STAT and SAL1L2 Text Files, Scalar Anomaly Partial Sums:
//           Total (TOTAL),
//           Forecast Anomaly Mean (FABAR),
//              = mean(f-c)
//           Observation Anomaly Mean (OABAR),
//              = mean(o-c)
//           Product of Forecast and Observation Anomalies Mean (FOABAR),
//              = mean((f-c)*(o-c))
//           Forecast Anomaly Squared Mean (FFABAR),
//              = mean((f-c)^2)
//           Observation Anomaly Squared Mean (OOABAR)
//              = mean((o-c)^2)
//
//    (7) STAT and VL1L2 Text Files, Vector Partial Sums:
//           Total (TOTAL),
//           U-Forecast Mean (UFBAR),
//              = mean(uf)
//           V-Forecast Mean (VFBAR),
//              = mean(vf)
//           U-Observation Mean (UOBAR),
//              = mean(uo)
//           V-Observation Mean (VOBAR),
//              = mean(vo)
//           U-Product Plus V-Product (UVFOBAR),
//              = mean(uf*uo+vf*vo)
//           U-Forecast Squared Plus V-Forecast Squared (UVFFBAR),
//              = mean(uf^2+vf^2)
//           U-Observation Squared Plus V-Observation Squared (UVOOBAR)
//              = mean(uo^2+vo^2)
//
//    (8) STAT and VAL1L2 Text Files, Vector Anomaly Partial Sums:
//           U-Forecast Anomaly Mean (UFABAR),
//              = mean(uf-uc)
//           V-Forecast Anomaly Mean (VFABAR),
//              = mean(vf-vc)
//           U-Observation Anomaly Mean (UOABAR),
//              = mean(uo-uc)
//           V-Observation Anomaly Mean (VOABAR),
//              = mean(vo-vc)
//           U-Anomaly Product Plus V-Anomaly Product (UVFOABAR),
//              = mean((uf-uc)*(uo-uc)+(vf-vc)*(vo-vc))
//           U-Forecast Anomaly Squared Plus V-Forecast Anomaly Squared
(UVFFABAR),
//              = mean((uf-uc)^2+(vf-vc)^2)
//           U-Observation Anomaly Squared Plus V-Observation Anomaly
Squared (UVOOABAR)
//              = mean((uo-uc)^2+(vo-vc)^2)
//
//    (9) STAT and PCT Text Files, Nx2 Probability Contingency Table
Counts:
```

```
//          Total (TOTAL),
//          Number of Forecast Probability Thresholds (N_THRESH),
//          Probability Threshold Value (THRESH_i),
//          Row Observation Yes Count (OY_i),
//          Row Observation No Count (ON_i),
//          NOTE: Previous 3 columns repeated for each row in the table
//          Last Probability Threshold Value (THRESH_n)
//
//   (10) STAT and PSTD Text Files, Nx2 Probability Contingency Table
Scores:
//          Total (TOTAL),
//          Number of Forecast Probability Thresholds (N_THRESH),
//          Reliability (RELIABILITY),
//          Resolution (RESOLUTION),
//          Uncertainty (UNCERTAINTY),
//          Area Under the ROC Curve (ROC_AUC),
//          Brier Score (BRIER), BRIER_NCL, BRIER_NCU,
//          Probability Threshold Value (THRESH_i)
//          NOTE: Previous column repeated for each probability threshold
//
//   (11) STAT and PJC Text Files, Joint/Continuous Statistics of
//                                 Probabilistic Variables:
//          Total (TOTAL),
//          Number of Forecast Probability Thresholds (N_THRESH),
//          Probability Threshold Value (THRESH_i),
//          Observation Yes Count Divided by Total (OY_TP_i),
//          Observation No Count Divided by Total (ON_TP_i),
//          Calibration (CALIBRATION_i),
//          Refinement (REFINEMENT_i),
//          Likelikhood (LIKELIHOOD_i),
//          Base Rate (BASER_i),
//          NOTE: Previous 7 columns repeated for each row in the table
//          Last Probability Threshold Value (THRESH_n)
//
//   (12) STAT and PRC Text Files, ROC Curve Points for
//                                 Probabilistic Variables:
//          Total (TOTAL),
//          Number of Forecast Probability Thresholds (N_THRESH),
//          Probability Threshold Value (THRESH_i),
//          Probability of Detecting Yes (PODY_i),
//          Probability of False Detection (POFD_i),
//          NOTE: Previous 3 columns repeated for each row in the table
//          Last Probability Threshold Value (THRESH_n)
//
//   (13) STAT and MPR Text Files, Matched Pair Data:
//          Total (TOTAL),
//          Index (INDEX),
//          Latitude (LAT),
//          Longitude (LON),
//          Level (LEVEL),
//          Forecast Value (FCST),
//          Observation Value (OBS),
//          Climatological Value (CLIMO),
//          Interpolation Methold (INTERP_MTHD),
```

```
//           Interpolation Points (INTERP_PNTS)
//
//   In the expressions above, f are forecast values, o are observed
values,
//   and c are climatological values.
//
// Values for these flags are interpreted as follows:
//    (0) Do not generate output of this type
//    (1) Write output to a STAT file
//    (2) Write output to a STAT file and a text file
//
output_flag[] = [ 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2 ];

//
// Flag to indicate whether Kendall's Tau and Spearman's Rank Correlation
// Coefficients should be computed.  Computing them over large datasets is
// computationally intensive and slows down the runtime execution
significantly.
//    (0) Do not compute these correlation coefficients
//    (1) Compute these correlation coefficients
//
rank_corr_flag = 1;

//
// Specify the GRIB Table 2 parameter table version number to be used
// for interpreting GRIB codes.
// http://www.nco.ncep.noaa.gov/pmb/docs/on388/table2.html
//
grib_ptv = 2;

//
// Directory where temporary files should be written.
//
tmp_dir = "/tmp";

//
// Prefix to be used for the output file names.
//
output_prefix = "m1o1pb";

//
// Indicate a version number for the contents of this configuration file.
// The value should generally not be modified.
//
version = "V2.0";
```

INTENTIONALLY LEFT BLANK.

Appendix G. Embedded Scripts: MET Stat-Analysis (Carson)

run_Stat_Analysis

```
# Script Purpose: To run Stat Analysis on Point Stat runs done for
Passner's
#             WRF models.
# Author: Yasmina R. Raby
# Date: 07/20/2010
# Script Name: run_Stat_Analysis
# Script Location: ~jraby/Scripts on carson
# Scripts Called: run_sfc_template, run_ua_adpupa_template.sh,
# run_ua_acft_template.sh, run_ua_aircar_template.sh,
# run_sfc_template_hours.sh, run_ua_template_all_hours.sh,
# run_acft_template_all_hours.sh, run_aircar_template_all_hours.sh
#     All in ~jraby/Scripts/Stat_Analysis_Scripts on carson
# Input:    Point Stat files expected to be located on carson in
#           ~jraby/MET_PointStat/results_(resolution/domain)_(variation)
# Output:   ~jraby/MET_StatAnalysis/Summary_byDay
#           ~jraby/MET_StatAnalysis/Summary_byHour

# What this script produces:
# Statistical analysis using Stat-Analysis for:
#     Surface and Upper Air data for one specific date
#     Surface and Upper Air data for each hour over all days
#     Surface and Upper Air data for all hours over all days
#     All Upper Air data for all cases contains info from ADPUPA, AIRCFT,
#     and AIRCAR.
echo "Start time: "
date


cd ~jraby/MET_StatAnalysis
mkdir -p ./logs/hourlylogs
mkdir -p ./logs/allhours

echo "Calculate (1)one date or (2)aggregate over many dates?"
read choice
if [ "$choice" == "1" ]
then
      echo "Enter Start_Date (YYYYmmdd) of the completed WRF run"
      read Start_Date
      echo "Enter WRF run variation (CO, P2, P8, T3, L4, L8, B2)"
      read variation
      echo "Enter domain/resolution (m1o1, m1o2, m2o2)"
      read domainResolution

      #Surface data
      echo "Running Stat Analysis on surface data for ${Start_Date}
${domainResolution} ${variation} ..."
      ~jraby/Scripts/Stat_Analysis_Scripts/daily/run_sfc_template.sh
$Start_Date $variation $domainResolution >&
logs/StatAnalysis_sfc_${Start_Date}_${domainResolution}_${variation}_log

      #Upper Air data: ADPUPA
```

```
      echo "Running Stat Analysis on Upper Air (ADPUPA) data for
${Start_Date} ${domainResolution} ${variation} ..."
      ~jraby/Scripts/Stat_Analysis_Scripts/daily/run_ua_adpupa_template.sh
$Start_Date $variation $domainResolution >&
logs/StatAnalysis_ua_${Start_Date}_${domainResolution}_${variation}_log

      #Upper Air data: AIRCFT
      echo "Running Stat Analysis on Upper Air (AIRCFT) data for
${Start_Date} ${domainResolution} ${variation} ..."
      ~jraby/Scripts/Stat_Analysis_Scripts/daily/run_ua_acft_template.sh
$Start_Date $variation $domainResolution >&
logs/StatAnalysis_acft_${Start_Date}_${domainResolution}_${variation}_log

      #Upper Air data: AIRCAR
      echo "Running Stat Analysis on Upper Air (AIRCAR) data for
${Start_Date} ${domainResolution} ${variation} ..."
      ~jraby/Scripts/Stat_Analysis_Scripts/daily/run_ua_aircar_template.sh
$Start_Date $variation $domainResolution >&
logs/StatAnalysis_aircar_${Start_Date}_${domainResolution}_${variation}_lo
g
      echo " "
      echo "run_Stat_Analysis completed."
      echo " "

      #Where the results are
      echo "Results are in /Summary_byDay/"
      echo "${domainResolution}_${variation}_sfc/${Start_Date}"
      echo "${domainResolution}_${variation}_ua/${Start_Date}"
      echo "${domainResolution}_${variation}_acft/${Start_Date}"
      echo "${domainResolution}_${variation}_aircar/${Start_Date}"
      echo " "

      #Where the logs are
      echo "Logs are in /logs/"
      echo
"StatAnalysis_sfc_${Start_Date}_${domainResolution}_${variation}_log"
      echo
"StatAnalysis_ua_${Start_Date}_${domainResolution}_${variation}_log"
      echo
"StatAnalysis_acft_${Start_Date}_${domainResolution}_${variation}_log"
      echo
"StatAnalysis_aircar_${Start_Date}_${domainResolution}_${variation}_log"
else
      echo "Enter WRF run variation (CO, P2, P8, T3, L4, L8, B2)"
      read variation
      echo "Enter domain/resolution (m1o1, m1o2, m2o2)"
      read domainResolution

      echo "What kind of results? (1)By hour or (2)all days, all hours
accumulated?"

      read dataChoice
      if [ "$dataChoice" == "1" ]
      then
```

```
            #Surface data - produces results for each hour aggregated over
all available days
            for i in 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17
18 19 20 21 22 23 24
            do
                  echo "Running Stat Analysis for surface data for h${i}
using all available dates within ${domainResolution}, WRF variation
${variation} ..."

      ~jraby/Scripts/Stat_Analysis_Scripts/hourly/run_sfc_template_hours.s
h $i $variation $domainResolution >&
logs/hourlylogs/StatAnalysis_sfc_${domainResolution}_${variation}_h${i}_lo
g
            done

            # Do the same for upper air data - ADPUPA will likely only
have 2
            # hours worth of data
            for i in 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17
18 19 20 21 22 23 24
            do
                  echo "Running Stat Analysis for upper air data (ADPUPA)
for h${i} using all available dates within ${domainResolution}, WRF
variation ${variation} ..."

      ~jraby/Scripts/Stat_Analysis_Scripts/hourly/run_ua_template_hours.sh
$i $variation $domainResolution >&
logs/hourlylogs/StatAnalysis_ua_${domainResolution}_${variation}_h${i}_log
            done

            # Do the same for upper air data - AIRCFT
            for i in 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17
18 19 20 21 22 23 24
            do
                  echo "Running Stat Analysis for upper air data (AIRCFT)
for h${i} using all available dates within ${domainResolution}, WRF
variation ${variation} ..."

      ~jraby/Scripts/Stat_Analysis_Scripts/hourly/run_ua_acft_template_hou
rs.sh $i $variation $domainResolution >&
logs/hourlylogs/StatAnalysis_ua_acft_${domainResolution}_${variation}_h${i
}_log
            done

            # Do the same for upper air data - AIRCAR
            for i in 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17
18 19 20 21 22 23 24
            do
                  echo "Running Stat Analysis for upper air data (AIRCAR)
for h${i} using all available dates within ${domainResolution}, WRF
variation ${variation} ..."

      ~jraby/Scripts/Stat_Analysis_Scripts/hourly/run_ua_aircar_template_h
ours.sh $i $variation $domainResolution >&
```

```
logs/hourlylogs/StatAnalysis_ua_aircar_${domainResolution}_${variation}_h$
{i}_log
            done

            #Where the results are
            echo " "
            echo "run_Stat_Analysis completed."
            echo " "
            echo "Results are in /Summary_byHour/"
            echo "${domainResolution}_${variation}_sfc/"
            echo "${domainResolution}_${variation}_ua/"
            echo "${domainResolution}_${variation}_ua_acft/"
            echo "${domainResolution}_${variation}_ua_aircar/"
            echo " "

            #Where the logs are
            echo "Logs are in logs/hourlylogs"
            echo
"StatAnalysis_sfc_${domainResolution}_${variation}_hxx_log"
            echo
"StatAnalysis_ua_${domainResolution}_${variation}_hxx_log"
            echo
"StatAnalysis_ua_acft_${domainResolution}_${variation}_hxx_log"
    echo "StatAnalysis_ua_aircar_${domainResolution}_${variation}_hxx_log"


      else
            #Surface data summarized over all days and over all hours
            echo "Running Stat Analysis for surface for all available
hours using all available dates within ${domainResolution}, WRF variation
${variation} ..."

      ~jraby/Scripts/Stat_Analysis_Scripts/all_hours/run_sfc_template_all_
hours.sh $variation $domainResolution >&
logs/allhours/StatAnalysis_sfc_${domainResolution}_${variation}_allhrs_log

            #Upper Air data summarized over all days and over all hours:
ADPUPA
            echo "Running Stat Analysis for upper air data (ADPUPA) for
all available hours using all available dates within ${domainResolution},
WRF variation ${variation} ..."

      ~jraby/Scripts/Stat_Analysis_Scripts/all_hours/run_ua_template_all_h
ours.sh $variation $domainResolution >&
logs/allhours/StatAnalysis_ua_${domainResolution}_${variation}_allhrs_log

            #Upper Air data summarized over all days and over all hours:
AIRCFT
            echo "Running Stat Analysis for upper air data (AIRCFT) for
all available hours using all available dates within ${domainResolution},
WRF variation ${variation} ..."

      ~jraby/Scripts/Stat_Analysis_Scripts/all_hours/run_acft_template_all
_hours.sh $variation $domainResolution >&
```

```
logs/allhours/StatAnalysis_acft_${domainResolution}_${variation}_allhrs_lo
g

            #Upper Air data summarized over all days and over all hours:
AIRCAR
            echo "Running Stat Analysis for upper air data (AIRCAR) for
all available hours using all available dates within ${domainResolution},
WRF variation ${variation} ..."

      ~jraby/Scripts/Stat_Analysis_Scripts/all_hours/run_aircar_template_a
ll_hours.sh $variation $domainResolution >&
logs/allhours/StatAnalysis_aircar_${domainResolution}_${variation}_allhrs_
log
            echo " "
            echo "run_Stat_Analysis completed."
            echo " "

            # Where the results are
            echo "Results are in /Summary_byHour/"
    echo "${domainResolution}_${variation}_sfc/allhrs"
            echo "${domainResolution}_${variation}_ua/allhrs"
            echo "${domainResolution}_${variation}_acft/allhrs"
            echo "${domainResolution}_${variation}_aircar/allhrs"
            echo " "

            # Where the logs are
            echo "Logs are in logs/hourlylogs/"
            echo
"StatAnalysis_sfc_${domainResolution}_${variation}_allhrs_log"
            echo
"StatAnalysis_ua_${domainResolution}_${variation}_allhrs_log"
            echo
"StatAnalysis_acft_${domainResolution}_${variation}_allhrs_log"
            echo
"StatAnalysis_aircar_${domainResolution}_${variation}_allhrs_log"

      fi
fi

echo "Finish time: "
date
```

run_sfc_template.sh

```
# Script Purpose: Uses stat analysis to analyze point stat surface data
# for a single day.
# Author: Yasmina R. Raby
# Date: 07/22/2010
# Script Name: run_sfc_template
# Script Location: ~jraby/Scripts/Stat_Analysis_Scripts/daily
# Script called by: run_Stat_Analysis

Start_Date=$1
variation=$2
domainResolution=$3

echo "Running Stat_Analysis"
mkdir -p
./Summary_byDay/${domainResolution}_${variation}_sfc/${Start_Date}

#If it is NOT a control run, then add an underbar to the WRF variation
type for the Point Stat results directories below.
if [ "$variation" != "CO" ]
      then
            var="_"$variation
      else
            var=""
fi

echo "Calculating Surface Statistics"

stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_sfc/${Start_Date}/${domai
nResolution}_${variation}_sfc_${Start_Date}_SFC_TMP.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obtype ADPSFC -fcst_var
TMP -fcst_lev Z2
stat_analysis -lookin
../MET_PointStat/results_$domainResolution$var/$Start_Date -out
./Summary_byDay/${domainResolution}_${variation}_sfc/${Start_Date}/${domai
nResolution}_${variation}_sfc_${Start_Date}_SFC_DPT.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obtype ADPSFC -fcst_var
DPT -fcst_lev Z2
stat_analysis -lookin
../MET_PointStat/results_$domainResolution$var/$Start_Date -out
./Summary_byDay/${domainResolution}_${variation}_sfc/${Start_Date}/${domai
nResolution}_${variation}_sfc_${Start_Date}_SFC_RH.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obtype ADPSFC -fcst_var
RH -fcst_lev Z2
stat_analysis -lookin
../MET_PointStat/results_$domainResolution$var/$Start_Date -out
./Summary_byDay/${domainResolution}_${variation}_sfc/${Start_Date}/${domai
nResolution}_${variation}_sfc_${Start_Date}_SFC_PRMSL.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obtype ADPSFC -fcst_var
PRMSL -fcst_lev Z0
```

```
stat_analysis -lookin
../MET_PointStat/results_$domainResolution$var/$Start_Date -out
./Summary_byDay/${domainResolution}_${variation}_sfc/${Start_Date}/${domai
nResolution}_${variation}_sfc_${Start_Date}_SFC_HGT.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obtype ADPSFC -fcst_var
HGT
stat_analysis -lookin
../MET_PointStat/results_$domainResolution$var/$Start_Date -out
./Summary_byDay/${domainResolution}_${variation}_sfc/${Start_Date}/${domai
nResolution}_${variation}_sfc_${Start_Date}_SFC_UGRD.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obtype ADPSFC -fcst_var
UGRD -fcst_lev Z10
stat_analysis -lookin
../MET_PointStat/results_$domainResolution$var/$Start_Date -out
./Summary_byDay/${domainResolution}_${variation}_sfc/${Start_Date}/${domai
nResolution}_${variation}_sfc_${Start_Date}_SFC_VGRD.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obtype ADPSFC -fcst_var
VGRD -fcst_lev Z10
stat_analysis -lookin
../MET_PointStat/results_$domainResolution$var/$Start_Date -out
./Summary_byDay/${domainResolution}_${variation}_sfc/${Start_Date}/${domai
nResolution}_${variation}_sfc_${Start_Date}_SFC_WIND.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obtype ADPSFC -fcst_var
WIND -fcst_lev Z10
stat_analysis -lookin
../MET_PointStat/results_$domainResolution$var/$Start_Date -out
./Summary_byDay/${domainResolution}_${variation}_sfc/${Start_Date}/${domai
nResolution}_${variation}_sfc_${Start_Date}_SFC_WDIR.txt -v 3 -job
aggregate_stat -line_type VL1L2 -out_line_type WDIR -obtype ADPSFC -
fcst_lev Z10
```

run_ua_adpupa_template.sh

```
# Script Purpose: Uses stat_analysis to analyze point stat ADPUPA data
# for a single day.
# Author: Yasmina R. Raby
# Date: 07/16/2010
# Script Name: run_ua_adpupa_template
# Script Location: ~jraby/Scripts/Stat_Analysis_Scripts/daily/
# Script called by: run_Stat_Analysis

Start_Date=$1
variation=$2
domainResolution=$3

echo "Running Stat_Analysis"
mkdir -p ./Summary_byDay/${domainResolution}_${variation}_ua/${Start_Date}

#If it is NOT a control run, then add an underbar to the WRF variation
type for the Point Stat results directories below.
if [ "$variation" != "CO" ]
      then
            var="_"$variation
      else
            var=""
fi

echo "Calculating Upper Air Temperature Statistics"

stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_ua/${Start_Date}/${domain
Resolution}_${variation}_ua_${Start_Date}_UA1_TMP.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P225-100 -obtype
ADPUPA -fcst_var TMP
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_ua/${Start_Date}/${domain
Resolution}_${variation}_ua_${Start_Date}_UA3_TMP.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P425-225 -obtype
ADPUPA -fcst_var TMP
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_ua/${Start_Date}/${domain
Resolution}_${variation}_ua_${Start_Date}_UA5_TMP.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P625-425 -obtype
ADPUPA -fcst_var TMP
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_ua/${Start_Date}/${domain
Resolution}_${variation}_ua_${Start_Date}_UA6_TMP.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P775-625 -obtype
ADPUPA -fcst_var TMP
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
```

```
./Summary_byDay/${domainResolution}_${variation}_ua/${Start_Date}/${domain
Resolution}_${variation}_ua_${Start_Date}_UA7_TMP.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P875-775 -obtype
ADPUPA -fcst_var TMP
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_ua/${Start_Date}/${domain
Resolution}_${variation}_ua_${Start_Date}_UA8_TMP.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P910-875 -obtype
ADPUPA -fcst_var TMP
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_ua/${Start_Date}/${domain
Resolution}_${variation}_ua_${Start_Date}_UA9_TMP.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P1010-910 -
obtype ADPUPA -fcst_var TMP

echo "Calculating Upper Air Dewpoint Temperature Statistics"

stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_ua/${Start_Date}/${domain
Resolution}_${variation}_ua_${Start_Date}_UA1_DPT.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P225-100 -obtype
ADPUPA -fcst_var DPT
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_ua/${Start_Date}/${domain
Resolution}_${variation}_ua_${Start_Date}_UA3_DPT.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P425-225 -obtype
ADPUPA -fcst_var DPT
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_ua/${Start_Date}/${domain
Resolution}_${variation}_ua_${Start_Date}_UA5_DPT.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P625-425 -obtype
ADPUPA -fcst_var DPT
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_ua/${Start_Date}/${domain
Resolution}_${variation}_ua_${Start_Date}_UA6_DPT.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P775-625 -obtype
ADPUPA -fcst_var DPT
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_ua/${Start_Date}/${domain
Resolution}_${variation}_ua_${Start_Date}_UA7_DPT.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P875-775 -obtype
ADPUPA -fcst_var DPT
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_ua/${Start_Date}/${domain
Resolution}_${variation}_ua_${Start_Date}_UA8_DPT.txt -v 3 -job
```

```
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P910-875 -obtype
ADPUPA -fcst_var DPT
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_ua/${Start_Date}/${domain
Resolution}_${variation}_ua_${Start_Date}_UA9_DPT.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P1010-910 -
obtype ADPUPA -fcst_var DPT

echo "Calculating Upper Air Relative Humidity Statistics"

stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_ua/${Start_Date}/${domain
Resolution}_${variation}_ua_${Start_Date}_UA1_RH.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P225-100 -obtype
ADPUPA -fcst_var RH
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_ua/${Start_Date}/${domain
Resolution}_${variation}_ua_${Start_Date}_UA3_RH.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P425-225 -obtype
ADPUPA -fcst_var RH
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_ua/${Start_Date}/${domain
Resolution}_${variation}_ua_${Start_Date}_UA5_RH.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P625-425 -obtype
ADPUPA -fcst_var RH
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_ua/${Start_Date}/${domain
Resolution}_${variation}_ua_${Start_Date}_UA6_RH.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P775-625 -obtype
ADPUPA -fcst_var RH
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_ua/${Start_Date}/${domain
Resolution}_${variation}_ua_${Start_Date}_UA7_RH.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P875-775 -obtype
ADPUPA -fcst_var RH
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_ua/${Start_Date}/${domain
Resolution}_${variation}_ua_${Start_Date}_UA8_RH.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P910-875 -obtype
ADPUPA -fcst_var RH
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_ua/${Start_Date}/${domain
Resolution}_${variation}_ua_${Start_Date}_UA9_RH.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P1010-910 -
obtype ADPUPA -fcst_var RH
```

```
echo "Calculating Upper Air Height Statistics"

stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_ua/${Start_Date}/${domain
Resolution}_${variation}_ua_${Start_Date}_UA1_HGT.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P225-100 -obtype
ADPUPA -fcst_var HGT
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_ua/${Start_Date}/${domain
Resolution}_${variation}_ua_${Start_Date}_UA3_HGT.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P425-225 -obtype
ADPUPA -fcst_var HGT
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_ua/${Start_Date}/${domain
Resolution}_${variation}_ua_${Start_Date}_UA5_HGT.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P625-425 -obtype
ADPUPA -fcst_var HGT
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_ua/${Start_Date}/${domain
Resolution}_${variation}_ua_${Start_Date}_UA6_HGT.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P775-625 -obtype
ADPUPA -fcst_var HGT
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_ua/${Start_Date}/${domain
Resolution}_${variation}_ua_${Start_Date}_UA7_HGT.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P875-775 -obtype
ADPUPA -fcst_var HGT
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_ua/${Start_Date}/${domain
Resolution}_${variation}_ua_${Start_Date}_UA8_HGT.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P910-875 -obtype
ADPUPA -fcst_var HGT
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_ua/${Start_Date}/${domain
Resolution}_${variation}_ua_${Start_Date}_UA9_HGT.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P1010-910 -
obtype ADPUPA -fcst_var HGT

echo "Calculating Upper Air U-Wind Component Statistics"

stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_ua/${Start_Date}/${domain
Resolution}_${variation}_ua_${Start_Date}_UA1_UGRD.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P225-100 -obtype
ADPUPA -fcst_var UGRD
```

```
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_ua/${Start_Date}/${domain
Resolution}_${variation}_ua_${Start_Date}_UA3_UGRD.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P425-225 -obtype
ADPUPA -fcst_var UGRD
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_ua/${Start_Date}/${domain
Resolution}_${variation}_ua_${Start_Date}_UA5_UGRD.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P625-425 -obtype
ADPUPA -fcst_var UGRD
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_ua/${Start_Date}/${domain
Resolution}_${variation}_ua_${Start_Date}_UA6_UGRD.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P775-625 -obtype
ADPUPA -fcst_var UGRD
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_ua/${Start_Date}/${domain
Resolution}_${variation}_ua_${Start_Date}_UA7_UGRD.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P875-775 -obtype
ADPUPA -fcst_var UGRD
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_ua/${Start_Date}/${domain
Resolution}_${variation}_ua_${Start_Date}_UA8_UGRD.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P910-875 -obtype
ADPUPA -fcst_var UGRD
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_ua/${Start_Date}/${domain
Resolution}_${variation}_ua_${Start_Date}_UA9_UGRD.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P1010-910 -
obtype ADPUPA -fcst_var UGRD

echo "Calculating Upper Air V-Wind Component Statistics"

stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_ua/${Start_Date}/${domain
Resolution}_${variation}_ua_${Start_Date}_UA1_VGRD.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P225-100 -obtype
ADPUPA -fcst_var VGRD
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_ua/${Start_Date}/${domain
Resolution}_${variation}_ua_${Start_Date}_UA3_VGRD.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P425-225 -obtype
ADPUPA -fcst_var VGRD
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_ua/${Start_Date}/${domain
```

```
Resolution}_${variation}_ua_${Start_Date}_UA5_VGRD.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P625-425 -obtype
ADPUPA -fcst_var VGRD
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_ua/${Start_Date}/${domain
Resolution}_${variation}_ua_${Start_Date}_UA6_VGRD.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P775-625 -obtype
ADPUPA -fcst_var VGRD
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_ua/${Start_Date}/${domain
Resolution}_${variation}_ua_${Start_Date}_UA7_VGRD.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P875-775 -obtype
ADPUPA -fcst_var VGRD
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_ua/${Start_Date}/${domain
Resolution}_${variation}_ua_${Start_Date}_UA8_VGRD.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P910-875 -obtype
ADPUPA -fcst_var VGRD
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_ua/${Start_Date}/${domain
Resolution}_${variation}_ua_${Start_Date}_UA9_VGRD.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P1010-910 -
obtype ADPUPA -fcst_var VGRD

echo "Calculating Upper Air Wind Speed Statistics"

stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_ua/${Start_Date}/${domain
Resolution}_${variation}_ua_${Start_Date}_UA1_WIND.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P225-100 -obtype
ADPUPA -fcst_var WIND
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_ua/${Start_Date}/${domain
Resolution}_${variation}_ua_${Start_Date}_UA3_WIND.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P425-225 -obtype
ADPUPA -fcst_var WIND
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_ua/${Start_Date}/${domain
Resolution}_${variation}_ua_${Start_Date}_UA5_WIND.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P625-425 -obtype
ADPUPA -fcst_var WIND
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_ua/${Start_Date}/${domain
Resolution}_${variation}_ua_${Start_Date}_UA6_WIND.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P775-625 -obtype
ADPUPA -fcst_var WIND
```

```
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_ua/${Start_Date}/${domain
Resolution}_${variation}_ua_${Start_Date}_UA7_WIND.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P875-775 -obtype
ADPUPA -fcst_var WIND
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_ua/${Start_Date}/${domain
Resolution}_${variation}_ua_${Start_Date}_UA8_WIND.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P910-875 -obtype
ADPUPA -fcst_var WIND
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_ua/${Start_Date}/${domain
Resolution}_${variation}_ua_${Start_Date}_UA9_WIND.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P1010-910 -
obtype ADPUPA -fcst_var WIND

echo "Calculating Upper Air Wind Direction Statistics"

stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_ua/${Start_Date}/${domain
Resolution}_${variation}_ua_${Start_Date}_UA1_WDIR.txt -v 3 -job
aggregate_stat -line_type VL1L2 -out_line_type WDIR -obs_lev P225-100 -
obtype ADPUPA
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_ua/${Start_Date}/${domain
Resolution}_${variation}_ua_${Start_Date}_UA3_WDIR.txt -v 3 -job
aggregate_stat -line_type VL1L2 -out_line_type WDIR -obs_lev P425-225 -
obtype ADPUPA
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_ua/${Start_Date}/${domain
Resolution}_${variation}_ua_${Start_Date}_UA5_WDIR.txt -v 3 -job
aggregate_stat -line_type VL1L2 -out_line_type WDIR -obs_lev P625-425 -
obtype ADPUPA
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_ua/${Start_Date}/${domain
Resolution}_${variation}_ua_${Start_Date}_UA6_WDIR.txt -v 3 -job
aggregate_stat -line_type VL1L2 -out_line_type WDIR -obs_lev P775-625 -
obtype ADPUPA
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_ua/${Start_Date}/${domain
Resolution}_${variation}_ua_${Start_Date}_UA7_WDIR.txt -v 3 -job
aggregate_stat -line_type VL1L2 -out_line_type WDIR -obs_lev P875-775 -
obtype ADPUPA
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_ua/${Start_Date}/${domain
```

```
Resolution}_${variation}_ua_${Start_Date}_UA8_WDIR.txt -v 3 -job
aggregate_stat -line_type VL1L2 -out_line_type WDIR -obs_lev P910-875 -
obtype ADPUPA
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_ua/${Start_Date}/${domain
Resolution}_${variation}_ua_${Start_Date}_UA9_WDIR.txt -v 3 -job
aggregate_stat -line_type VL1L2 -out_line_type WDIR -obs_lev P1010-910 -
obtype ADPUPA
```

run_ua_afct_template.sh

```
# Script Purpose: Uses stat_analysis to analyze point stat AIRCFT data
# for a single day.
# Author: Yasmina R. Raby
# Date: 07/22/2010
# Script Name: run_ua_acft_template
# Script Location: ~jraby/Scripts/Stat_Analysis_Scripts/daily/
# Script called by: run_Stat_Analysis

Start_Date=$1
variation=$2
domainResolution=$3

echo "Running Stat_Analysis"
mkdir -p
./Summary_byDay/${domainResolution}_${variation}_acft/${Start_Date}

#If it is NOT a control run, then add an underbar to the WRF variation
type for the Point Stat results directories below.
if [ "$variation" != "CO" ]
      then
            var="_"$variation
      else
            var=""
fi

echo "Calculating Upper Air Temperature Statistics"

stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_acft/${Start_Date}/${doma
inResolution}_${variation}_acft_${Start_Date}_UA1_TMP.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P225-100 -obtype
AIRCFT -fcst_var TMP
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_acft/${Start_Date}/${doma
inResolution}_${variation}_acft_${Start_Date}_UA3_TMP.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P425-225 -obtype
AIRCFT -fcst_var TMP
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_acft/${Start_Date}/${doma
inResolution}_${variation}_acft_${Start_Date}_UA5_TMP.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P625-425 -obtype
AIRCFT -fcst_var TMP
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_acft/${Start_Date}/${doma
inResolution}_${variation}_acft_${Start_Date}_UA6_TMP.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P775-625 -obtype
AIRCFT -fcst_var TMP
```

```
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_acft/${Start_Date}/${doma
inResolution}_${variation}_acft_${Start_Date}_UA7_TMP.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P875-775 -obtype
AIRCFT -fcst_var TMP
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_acft/${Start_Date}/${doma
inResolution}_${variation}_acft_${Start_Date}_UA8_TMP.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P910-875 -obtype
AIRCFT -fcst_var TMP
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_acft/${Start_Date}/${doma
inResolution}_${variation}_acft_${Start_Date}_UA9_TMP.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P1010-910 -
obtype AIRCFT -fcst_var TMP

echo "Calculating Upper Air Dewpoint Temperature Statistics"

stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_acft/${Start_Date}/${doma
inResolution}_${variation}_acft_${Start_Date}_UA1_DPT.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P225-100 -obtype
AIRCFT -fcst_var DPT
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_acft/${Start_Date}/${doma
inResolution}_${variation}_acft_${Start_Date}_UA3_DPT.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P425-225 -obtype
AIRCFT -fcst_var DPT
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_acft/${Start_Date}/${doma
inResolution}_${variation}_acft_${Start_Date}_UA5_DPT.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P625-425 -obtype
AIRCFT -fcst_var DPT
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_acft/${Start_Date}/${doma
inResolution}_${variation}_acft_${Start_Date}_UA6_DPT.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P775-625 -obtype
AIRCFT -fcst_var DPT
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_acft/${Start_Date}/${doma
inResolution}_${variation}_acft_${Start_Date}_UA7_DPT.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P875-775 -obtype
AIRCFT -fcst_var DPT
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_acft/${Start_Date}/${doma
```

```
inResolution}_${variation}_acft_${Start_Date}_UA8_DPT.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P910-875 -obtype
AIRCFT -fcst_var DPT
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_acft/${Start_Date}/${doma
inResolution}_${variation}_acft_${Start_Date}_UA9_DPT.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P1010-910 -
obtype AIRCFT -fcst_var DPT

echo "Calculating Upper Air Relative Humidity Statistics"

stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_acft/${Start_Date}/${doma
inResolution}_${variation}_acft_${Start_Date}_UA1_RH.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P225-100 -obtype
AIRCFT -fcst_var RH
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_acft/${Start_Date}/${doma
inResolution}_${variation}_acft_${Start_Date}_UA3_RH.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P425-225 -obtype
AIRCFT -fcst_var RH
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_acft/${Start_Date}/${doma
inResolution}_${variation}_acft_${Start_Date}_UA5_RH.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P625-425 -obtype
AIRCFT -fcst_var RH
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_acft/${Start_Date}/${doma
inResolution}_${variation}_acft_${Start_Date}_UA6_RH.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P775-625 -obtype
AIRCFT -fcst_var RH
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_acft/${Start_Date}/${doma
inResolution}_${variation}_acft_${Start_Date}_UA7_RH.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P875-775 -obtype
AIRCFT -fcst_var RH
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_acft/${Start_Date}/${doma
inResolution}_${variation}_acft_${Start_Date}_UA8_RH.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P910-875 -obtype
AIRCFT -fcst_var RH
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_acft/${Start_Date}/${doma
inResolution}_${variation}_acft_${Start_Date}_UA9_RH.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P1010-910 -
obtype AIRCFT -fcst_var RH
```

```
echo "Calculating Upper Air Height Statistics"

stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_acft/${Start_Date}/${doma
inResolution}_${variation}_acft_${Start_Date}_UA1_HGT.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P225-100 -obtype
AIRCFT -fcst_var HGT
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_acft/${Start_Date}/${doma
inResolution}_${variation}_acft_${Start_Date}_UA3_HGT.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P425-225 -obtype
AIRCFT -fcst_var HGT
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_acft/${Start_Date}/${doma
inResolution}_${variation}_acft_${Start_Date}_UA5_HGT.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P625-425 -obtype
AIRCFT -fcst_var HGT
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_acft/${Start_Date}/${doma
inResolution}_${variation}_acft_${Start_Date}_UA6_HGT.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P775-625 -obtype
AIRCFT -fcst_var HGT
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_acft/${Start_Date}/${doma
inResolution}_${variation}_acft_${Start_Date}_UA7_HGT.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P875-775 -obtype
AIRCFT -fcst_var HGT
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_acft/${Start_Date}/${doma
inResolution}_${variation}_acft_${Start_Date}_UA8_HGT.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P910-875 -obtype
AIRCFT -fcst_var HGT
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_acft/${Start_Date}/${doma
inResolution}_${variation}_acft_${Start_Date}_UA9_HGT.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P1010-910 -
obtype AIRCFT -fcst_var HGT

echo "Calculating Upper Air U-Wind Component Statistics"

stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_acft/${Start_Date}/${doma
inResolution}_${variation}_acft_${Start_Date}_UA1_UGRD.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P225-100 -obtype
AIRCFT -fcst_var UGRD
```

```
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_acft/${Start_Date}/${doma
inResolution}_${variation}_acft_${Start_Date}_UA3_UGRD.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P425-225 -obtype
AIRCFT -fcst_var UGRD
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_acft/${Start_Date}/${doma
inResolution}_${variation}_acft_${Start_Date}_UA5_UGRD.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P625-425 -obtype
AIRCFT -fcst_var UGRD
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_acft/${Start_Date}/${doma
inResolution}_${variation}_acft_${Start_Date}_UA6_UGRD.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P775-625 -obtype
AIRCFT -fcst_var UGRD
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_acft/${Start_Date}/${doma
inResolution}_${variation}_acft_${Start_Date}_UA7_UGRD.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P875-775 -obtype
AIRCFT -fcst_var UGRD
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_acft/${Start_Date}/${doma
inResolution}_${variation}_acft_${Start_Date}_UA8_UGRD.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P910-875 -obtype
AIRCFT -fcst_var UGRD
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_acft/${Start_Date}/${doma
inResolution}_${variation}_acft_${Start_Date}_UA9_UGRD.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P1010-910 -
obtype AIRCFT -fcst_var UGRD

echo "Calculating Upper Air V-Wind Component Statistics"

stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_acft/${Start_Date}/${doma
inResolution}_${variation}_acft_${Start_Date}_UA1_VGRD.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P225-100 -obtype
AIRCFT -fcst_var VGRD
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_acft/${Start_Date}/${doma
inResolution}_${variation}_acft_${Start_Date}_UA3_VGRD.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P425-225 -obtype
AIRCFT -fcst_var VGRD
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_acft/${Start_Date}/${doma
```

```
inResolution}_${variation}_acft_${Start_Date}_UA5_VGRD.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P625-425 -obtype
AIRCFT -fcst_var VGRD
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_acft/${Start_Date}/${doma
inResolution}_${variation}_acft_${Start_Date}_UA6_VGRD.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P775-625 -obtype
AIRCFT -fcst_var VGRD
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_acft/${Start_Date}/${doma
inResolution}_${variation}_acft_${Start_Date}_UA7_VGRD.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P875-775 -obtype
AIRCFT -fcst_var VGRD
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_acft/${Start_Date}/${doma
inResolution}_${variation}_acft_${Start_Date}_UA8_VGRD.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P910-875 -obtype
AIRCFT -fcst_var VGRD
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_acft/${Start_Date}/${doma
inResolution}_${variation}_acft_${Start_Date}_UA9_VGRD.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P1010-910 -
obtype AIRCFT -fcst_var VGRD

echo "Calculating Upper Air Wind Speed Statistics"

stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_acft/${Start_Date}/${doma
inResolution}_${variation}_acft_${Start_Date}_UA1_WIND.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P225-100 -obtype
AIRCFT -fcst_var WIND
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_acft/${Start_Date}/${doma
inResolution}_${variation}_acft_${Start_Date}_UA3_WIND.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P425-225 -obtype
AIRCFT -fcst_var WIND
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_acft/${Start_Date}/${doma
inResolution}_${variation}_acft_${Start_Date}_UA5_WIND.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P625-425 -obtype
AIRCFT -fcst_var WIND
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_acft/${Start_Date}/${doma
inResolution}_${variation}_acft_${Start_Date}_UA6_WIND.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P775-625 -obtype
AIRCFT -fcst_var WIND
```

```
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_acft/${Start_Date}/${doma
inResolution}_${variation}_acft_${Start_Date}_UA7_WIND.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P875-775 -obtype
AIRCFT -fcst_var WIND
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_acft/${Start_Date}/${doma
inResolution}_${variation}_acft_${Start_Date}_UA8_WIND.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P910-875 -obtype
AIRCFT -fcst_var WIND
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_acft/${Start_Date}/${doma
inResolution}_${variation}_acft_${Start_Date}_UA9_WIND.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P1010-910 -
obtype AIRCFT -fcst_var WIND

echo "Calculating Upper Air Wind Direction Statistics"

stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_acft/${Start_Date}/${doma
inResolution}_${variation}_acft_${Start_Date}_UA1_WDIR.txt -v 3 -job
aggregate_stat -line_type VL1L2 -out_line_type WDIR -obs_lev P225-100 -
obtype AIRCFT
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_acft/${Start_Date}/${doma
inResolution}_${variation}_acft_${Start_Date}_UA3_WDIR.txt -v 3 -job
aggregate_stat -line_type VL1L2 -out_line_type WDIR -obs_lev P425-225 -
obtype AIRCFT
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_acft/${Start_Date}/${doma
inResolution}_${variation}_acft_${Start_Date}_UA5_WDIR.txt -v 3 -job
aggregate_stat -line_type VL1L2 -out_line_type WDIR -obs_lev P625-425 -
obtype AIRCFT
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_acft/${Start_Date}/${doma
inResolution}_${variation}_acft_${Start_Date}_UA6_WDIR.txt -v 3 -job
aggregate_stat -line_type VL1L2 -out_line_type WDIR -obs_lev P775-625 -
obtype AIRCFT
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_acft/${Start_Date}/${doma
inResolution}_${variation}_acft_${Start_Date}_UA7_WDIR.txt -v 3 -job
aggregate_stat -line_type VL1L2 -out_line_type WDIR -obs_lev P875-775 -
obtype AIRCFT
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_acft/${Start_Date}/${doma
```

```
inResolution}_${variation}_acft_${Start_Date}_UA8_WDIR.txt -v 3 -job
aggregate_stat -line_type VL1L2 -out_line_type WDIR -obs_lev P910-875 -
obtype AIRCFT
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_acft/${Start_Date}/${doma
inResolution}_${variation}_acft_${Start_Date}_UA9_WDIR.txt -v 3 -job
aggregate_stat -line_type VL1L2 -out_line_type WDIR -obs_lev P1010-910 -
obtype ADPUPA
```

run_ua_aircar_template.sh

```
# Script Purpose: Uses stat_analysis to analyze point stat AIRCAR data
# for a single day.
# Author: Yasmina R. Raby
# Date: 07/22/2010
# Script Name: run_ua_aircar_template
# Script Location: ~jraby/Scripts/Stat_Analysis_Scripts/daily/
# Script called by: run_Stat_Analysis

Start_Date=$1
variation=$21
domainResolution=$3

echo "Running Stat_Analysis"
mkdir -p
./Summary_byDay/${domainResolution}_${variation}_aircar/${Start_Date}

#If it is NOT a control run, then add an underbar to the WRF variation
type for the Point Stat results directories below.
if [ "$variation" != "CO" ]
      then
            var="_"$variation
      else
            var=""
fi

echo "Calculating Upper Air Temperature Statistics"

stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_aircar/${Start_Date}/${do
mainResolution}_${variation}_aircar_${Start_Date}_UA1_TMP.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P225-100 -obtype
AIRCAR -fcst_var TMP
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_aircar/${Start_Date}/${do
mainResolution}_${variation}_aircar_${Start_Date}_UA3_TMP.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P425-225 -obtype
AIRCAR -fcst_var TMP
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_aircar/${Start_Date}/${do
mainResolution}_${variation}_aircar_${Start_Date}_UA5_TMP.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P625-425 -obtype
AIRCAR -fcst_var TMP
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_aircar/${Start_Date}/${do
mainResolution}_${variation}_aircar_${Start_Date}_UA6_TMP.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P775-625 -obtype
AIRCAR -fcst_var TMP
```

```
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_aircar/${Start_Date}/${do
mainResolution}_${variation}_aircar_${Start_Date}_UA7_TMP.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P875-775 -obtype
AIRCAR -fcst_var TMP
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_aircar/${Start_Date}/${do
mainResolution}_${variation}_aircar_${Start_Date}_UA8_TMP.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P910-875 -obtype
AIRCAR -fcst_var TMP
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_aircar/${Start_Date}/${do
mainResolution}_${variation}_aircar_${Start_Date}_UA9_TMP.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P1010-910 -
obtype AIRCAR -fcst_var TMP

echo "Calculating Upper Air Dewpoint Temperature Statistics"

stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_aircar/${Start_Date}/${do
mainResolution}_${variation}_aircar_${Start_Date}_UA1_DPT.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P225-100 -obtype
AIRCAR -fcst_var DPT
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_aircar/${Start_Date}/${do
mainResolution}_${variation}_aircar_${Start_Date}_UA3_DPT.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P425-225 -obtype
AIRCAR -fcst_var DPT
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_aircar/${Start_Date}/${do
mainResolution}_${variation}_aircar_${Start_Date}_UA5_DPT.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P625-425 -obtype
AIRCAR -fcst_var DPT
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_aircar/${Start_Date}/${do
mainResolution}_${variation}_aircar_${Start_Date}_UA6_DPT.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P775-625 -obtype
AIRCAR -fcst_var DPT
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_aircar/${Start_Date}/${do
mainResolution}_${variation}_aircar_${Start_Date}_UA7_DPT.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P875-775 -obtype
AIRCAR -fcst_var DPT
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_aircar/${Start_Date}/${do
```

```
mainResolution}_${variation}_aircar_${Start_Date}_UA8_DPT.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P910-875 -obtype
AIRCAR -fcst_var DPT
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_aircar/${Start_Date}/${do
mainResolution}_${variation}_aircar_${Start_Date}_UA9_DPT.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P1010-910 -
obtype AIRCAR -fcst_var DPT

echo "Calculating Upper Air Relative Humidity Statistics"

stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_aircar/${Start_Date}/${do
mainResolution}_${variation}_aircar_${Start_Date}_UA1_RH.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P225-100 -obtype
AIRCAR -fcst_var RH
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_aircar/${Start_Date}/${do
mainResolution}_${variation}_aircar_${Start_Date}_UA3_RH.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P425-225 -obtype
AIRCAR -fcst_var RH
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_aircar/${Start_Date}/${do
mainResolution}_${variation}_aircar_${Start_Date}_UA5_RH.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P625-425 -obtype
AIRCAR -fcst_var RH
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_aircar/${Start_Date}/${do
mainResolution}_${variation}_aircar_${Start_Date}_UA6_RH.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P775-625 -obtype
AIRCAR -fcst_var RH
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_aircar/${Start_Date}/${do
mainResolution}_${variation}_aircar_${Start_Date}_UA7_RH.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P875-775 -obtype
AIRCAR -fcst_var RH
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_aircar/${Start_Date}/${do
mainResolution}_${variation}_aircar_${Start_Date}_UA8_RH.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P910-875 -obtype
AIRCAR -fcst_var RH
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_aircar/${Start_Date}/${do
mainResolution}_${variation}_aircar_${Start_Date}_UA9_RH.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P1010-910 -
obtype AIRCAR -fcst_var RH
```

```
echo "Calculating Upper Air Height Statistics"

stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_aircar/${Start_Date}/${do
mainResolution}_${variation}_aircar_${Start_Date}_UA1_HGT.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P225-100 -obtype
AIRCAR -fcst_var HGT
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_aircar/${Start_Date}/${do
mainResolution}_${variation}_aircar_${Start_Date}_UA3_HGT.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P425-225 -obtype
AIRCAR -fcst_var HGT
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_aircar/${Start_Date}/${do
mainResolution}_${variation}_aircar_${Start_Date}_UA5_HGT.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P625-425 -obtype
AIRCAR -fcst_var HGT
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_aircar/${Start_Date}/${do
mainResolution}_${variation}_aircar_${Start_Date}_UA6_HGT.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P775-625 -obtype
AIRCAR -fcst_var HGT
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_aircar/${Start_Date}/${do
mainResolution}_${variation}_aircar_${Start_Date}_UA7_HGT.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P875-775 -obtype
AIRCAR -fcst_var HGT
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_aircar/${Start_Date}/${do
mainResolution}_${variation}_aircar_${Start_Date}_UA8_HGT.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P910-875 -obtype
AIRCAR -fcst_var HGT
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_aircar/${Start_Date}/${do
mainResolution}_${variation}_aircar_${Start_Date}_UA9_HGT.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P1010-910 -
obtype AIRCAR -fcst_var HGT

echo "Calculating Upper Air U-Wind Component Statistics"

stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_aircar/${Start_Date}/${do
mainResolution}_${variation}_aircar_${Start_Date}_UA1_UGRD.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P225-100 -obtype
AIRCAR -fcst_var UGRD
```

```
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_aircar/${Start_Date}/${do
mainResolution}_${variation}_aircar_${Start_Date}_UA3_UGRD.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P425-225 -obtype
AIRCAR -fcst_var UGRD
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_aircar/${Start_Date}/${do
mainResolution}_${variation}_aircar_${Start_Date}_UA5_UGRD.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P625-425 -obtype
AIRCAR -fcst_var UGRD
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_aircar/${Start_Date}/${do
mainResolution}_${variation}_aircar_${Start_Date}_UA6_UGRD.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P775-625 -obtype
AIRCAR -fcst_var UGRD
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_aircar/${Start_Date}/${do
mainResolution}_${variation}_aircar_${Start_Date}_UA7_UGRD.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P875-775 -obtype
AIRCAR -fcst_var UGRD
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_aircar/${Start_Date}/${do
mainResolution}_${variation}_aircar_${Start_Date}_UA8_UGRD.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P910-875 -obtype
AIRCAR -fcst_var UGRD
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_aircar/${Start_Date}/${do
mainResolution}_${variation}_aircar_${Start_Date}_UA9_UGRD.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P1010-910 -
obtype AIRCAR -fcst_var UGRD

echo "Calculating Upper Air V-Wind Component Statistics"

stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_aircar/${Start_Date}/${do
mainResolution}_${variation}_aircar_${Start_Date}_UA1_VGRD.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P225-100 -obtype
AIRCAR -fcst_var VGRD
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_aircar/${Start_Date}/${do
mainResolution}_${variation}_aircar_${Start_Date}_UA3_VGRD.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P425-225 -obtype
AIRCAR -fcst_var VGRD
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_aircar/${Start_Date}/${do
```

```
mainResolution}_${variation}_aircar_${Start_Date}_UA5_VGRD.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P625-425 -obtype
AIRCAR -fcst_var VGRD
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_aircar/${Start_Date}/${do
mainResolution}_${variation}_aircar_${Start_Date}_UA6_VGRD.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P775-625 -obtype
AIRCAR -fcst_var VGRD
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_aircar/${Start_Date}/${do
mainResolution}_${variation}_aircar_${Start_Date}_UA7_VGRD.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P875-775 -obtype
AIRCAR -fcst_var VGRD
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_aircar/${Start_Date}/${do
mainResolution}_${variation}_aircar_${Start_Date}_UA8_VGRD.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P910-875 -obtype
AIRCAR -fcst_var VGRD
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_aircar/${Start_Date}/${do
mainResolution}_${variation}_aircar_${Start_Date}_UA9_VGRD.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P1010-910 -
obtype AIRCAR -fcst_var VGRD

echo "Calculating Upper Air Wind Speed Statistics"

stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_aircar/${Start_Date}/${do
mainResolution}_${variation}_aircar_${Start_Date}_UA1_WIND.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P225-100 -obtype
AIRCAR -fcst_var WIND
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_aircar/${Start_Date}/${do
mainResolution}_${variation}_aircar_${Start_Date}_UA3_WIND.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P425-225 -obtype
AIRCAR -fcst_var WIND
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_aircar/${Start_Date}/${do
mainResolution}_${variation}_aircar_${Start_Date}_UA5_WIND.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P625-425 -obtype
AIRCAR -fcst_var WIND
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_aircar/${Start_Date}/${do
mainResolution}_${variation}_aircar_${Start_Date}_UA6_WIND.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P775-625 -obtype
AIRCAR -fcst_var WIND
```

```
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_aircar/${Start_Date}/${do
mainResolution}_${variation}_aircar_${Start_Date}_UA7_WIND.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P875-775 -obtype
AIRCAR -fcst_var WIND
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_aircar/${Start_Date}/${do
mainResolution}_${variation}_aircar_${Start_Date}_UA8_WIND.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P910-875 -obtype
AIRCAR -fcst_var WIND
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_aircar/${Start_Date}/${do
mainResolution}_${variation}_aircar_${Start_Date}_UA9_WIND.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P1010-910 -
obtype AIRCAR -fcst_var WIND

echo "Calculating Upper Air Wind Direction Statistics"

stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_aircar/${Start_Date}/${do
mainResolution}_${variation}_aircar_${Start_Date}_UA1_WDIR.txt -v 3 -job
aggregate_stat -line_type VL1L2 -out_line_type WDIR -obs_lev P225-100 -
obtype AIRCAR
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_aircar/${Start_Date}/${do
mainResolution}_${variation}_aircar_${Start_Date}_UA3_WDIR.txt -v 3 -job
aggregate_stat -line_type VL1L2 -out_line_type WDIR -obs_lev P425-225 -
obtype AIRCAR
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_aircar/${Start_Date}/${do
mainResolution}_${variation}_aircar_${Start_Date}_UA5_WDIR.txt -v 3 -job
aggregate_stat -line_type VL1L2 -out_line_type WDIR -obs_lev P625-425 -
obtype AIRCAR
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_aircar/${Start_Date}/${do
mainResolution}_${variation}_aircar_${Start_Date}_UA6_WDIR.txt -v 3 -job
aggregate_stat -line_type VL1L2 -out_line_type WDIR -obs_lev P775-625 -
obtype AIRCAR
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_aircar/${Start_Date}/${do
mainResolution}_${variation}_aircar_${Start_Date}_UA7_WDIR.txt -v 3 -job
aggregate_stat -line_type VL1L2 -out_line_type WDIR -obs_lev P875-775 -
obtype AIRCAR
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_aircar/${Start_Date}/${do
```

```
mainResolution}_${variation}_aircar_${Start_Date}_UA8_WDIR.txt -v 3 -job
aggregate_stat -line_type VL1L2 -out_line_type WDIR -obs_lev P910-875 -
obtype AIRCAR
stat_analysis -lookin
../MET_PointStat/results_${domainResolution}${var}/${Start_Date} -out
./Summary_byDay/${domainResolution}_${variation}_aircar/${Start_Date}/${do
mainResolution}_${variation}_aircar_${Start_Date}_UA9_WDIR.txt -v 3 -job
aggregate_stat -line_type VL1L2 -out_line_type WDIR -obs_lev P1010-910 -
obtype ADPUPA
```

run_sfc_template_hours.sh

```
# Script Purpose: Produces hourly surface statistics for all available
# dates using stat analysis and point stat results.
# Author: Yasmina R. Raby
# Date: 07/22/2010
# Script Name: run_sfc_template_hours.sh
# Script Location: ~jraby/Scripts/Stat_Analysis_Scripts/hourly/
# Script called by: run_Stat_Analysis

hour=$1
variation=$2
domainResolution=$3

echo "Running Stat_Analysis for hour " $hour
mkdir -p ./Summary_byHour/${domainResolution}_${variation}_sfc/hr${hour}

if [ "$variation" != "CO" ]
      then
            var="_"$variation
      else
            var=""
fi

echo "Calculating Surface Statistics"

stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_sfc/hr${hour}/${domainRe
solution}_${variation}_sfc_SFC_TMP_hr${hour}.txt -v 3 -job aggregate_stat
-line_type MPR -out_line_type CNT -obtype ADPSFC -fcst_var TMP -fcst_lev
Z2 -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_sfc/hr${hour}/${domainRe
solution}_${variation}_sfc_SFC_DPT_hr${hour}.txt -v 3 -job aggregate_stat
-line_type MPR -out_line_type CNT -obtype ADPSFC -fcst_var DPT -fcst_lev
Z2 -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_sfc/hr${hour}/${domainRe
solution}_${variation}_sfc_SFC_RH_hr${hour}.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obtype ADPSFC -fcst_var RH -fcst_lev Z2
-fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_sfc/hr${hour}/${domainRe
solution}_${variation}_sfc_SFC_PRMSL_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obtype ADPSFC -fcst_var
PRMSL -fcst_lev Z0 -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_sfc/hr${hour}/${domainRe
solution}_${variation}_sfc_SFC_HGT_hr${hour}.txt -v 3 -job aggregate_stat
```

```
-line_type MPR -out_line_type CNT -obtype ADPSFC -fcst_var HGT -fcst_lead
${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_sfc/hr${hour}/${domainRe
solution}_${variation}_sfc_SFC_UGRD_hr${hour}.txt -v 3 -job aggregate_stat
-line_type MPR -out_line_type CNT -obtype ADPSFC -fcst_var UGRD -fcst_lev
Z10 -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_sfc/hr${hour}/${domainRe
solution}_${variation}_sfc_SFC_VGRD_hr${hour}.txt -v 3 -job aggregate_stat
-line_type MPR -out_line_type CNT -obtype ADPSFC -fcst_var VGRD -fcst_lev
Z10 -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_sfc/hr${hour}/${domainRe
solution}_${variation}_sfc_SFC_WIND_hr${hour}.txt -v 3 -job aggregate_stat
-line_type MPR -out_line_type CNT -obtype ADPSFC -fcst_var WIND -fcst_lev
Z10 -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_sfc/hr${hour}/${domainRe
solution}_${variation}_sfc_SFC_WDIR_hr${hour}.txt -v 3 -job aggregate_stat
-line_type VL1L2 -out_line_type WDIR -obtype ADPSFC -fcst_lev Z10 -
fcst_lead ${hour}0000
```

run_ua_template_hours.sh

```
# Script Purpose: Produces hourly upper air (ADPUPA) statistics for all
# available dates using stat analysis and point stat results.
# Author: Yasmina R. Raby
# Date: 07/28/2010
# Script Name: run_ua_template_hours
# Script Location: ~jraby/Scripts/Stat_Analysis_Scripts/hourly/
# Script called by: run_Stat_Analysis


hour=$1
variation=$2
domainResolution=$3

echo "Running Stat_Analysis for hour " $hour
mkdir -p ./Summary_byHour/${domainResolution}_${variation}_ua/hr${hour}

#If it is NOT a control run, then add an underbar to the WRF variation
type for the Point Stat results directories below.
if [ "$variation" != "CO" ]
      then
            var="_"$variation
      else
            var=""
fi

echo "Calculating Upper Air Temperature Statistics"

stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/hr${hour}/${domainRes
olution}_${variation}_ua_UA1_TMP_hr${hour}.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P225-100 -obtype ADPUPA -
fcst_var TMP -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/hr${hour}/${domainRes
olution}_${variation}_ua_UA3_TMP_hr${hour}.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P425-225 -obtype ADPUPA -
fcst_var TMP -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/hr${hour}/${domainRes
olution}_${variation}_ua_UA5_TMP_hr${hour}.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P625-425 -obtype ADPUPA -
fcst_var TMP -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/hr${hour}/${domainRes
olution}_${variation}_ua_UA6_TMP_hr${hour}.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P775-625 -obtype ADPUPA -
fcst_var TMP -fcst_lead ${hour}0000
```

```
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/hr${hour}/${domainRes
olution}_${variation}_ua_UA7_TMP_hr${hour}.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P875-775 -obtype ADPUPA -
fcst_var TMP -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/hr${hour}/${domainRes
olution}_${variation}_ua_UA8_TMP_hr${hour}.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P910-875 -obtype ADPUPA -
fcst_var TMP -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/hr${hour}/${domainRes
olution}_${variation}_ua_UA9_TMP_hr${hour}.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P1010-910 -obtype ADPUPA -
fcst_var TMP -fcst_lead ${hour}0000

echo "Calculating Upper Air Dewpoint Temperature Statistics"

stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/hr${hour}/${domainRes
olution}_${variation}_ua_UA1_DPT_hr${hour}.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P225-100 -obtype ADPUPA -
fcst_var DPT -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/hr${hour}/${domainRes
olution}_${variation}_ua_UA3_DPT_hr${hour}.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P425-225 -obtype ADPUPA -
fcst_var DPT -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/hr${hour}/${domainRes
olution}_${variation}_ua_UA5_DPT_hr${hour}.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P625-425 -obtype ADPUPA -
fcst_var DPT -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/hr${hour}/${domainRes
olution}_${variation}_ua_UA6_DPT_hr${hour}.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P775-625 -obtype ADPUPA -
fcst_var DPT -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/hr${hour}/${domainRes
olution}_${variation}_ua_UA7_DPT_hr${hour}.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P875-775 -obtype ADPUPA -
fcst_var DPT -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/hr${hour}/${domainRes
```

```
olution}_${variation}_ua_UA8_DPT_hr${hour}.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P910-875 -obtype ADPUPA -
fcst_var DPT -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/hr${hour}/${domainRes
olution}_${variation}_ua_UA9_DPT_hr${hour}.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P1010-910 -obtype ADPUPA -
fcst_var DPT -fcst_lead ${hour}0000

echo "Calculating Upper Air Relative Humidity Statistics"

stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/hr${hour}/${domainRes
olution}_${variation}_ua_UA1_RH_hr${hour}.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P225-100 -obtype ADPUPA -
fcst_var RH -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/hr${hour}/${domainRes
olution}_${variation}_ua_UA3_RH_hr${hour}.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P425-225 -obtype ADPUPA -
fcst_var RH -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/hr${hour}/${domainRes
olution}_${variation}_ua_UA5_RH_hr${hour}.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P625-425 -obtype ADPUPA -
fcst_var RH -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/hr${hour}/${domainRes
olution}_${variation}_ua_UA6_RH_hr${hour}.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P775-625 -obtype ADPUPA -
fcst_var RH -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/hr${hour}/${domainRes
olution}_${variation}_ua_UA7_RH_hr${hour}.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P875-775 -obtype ADPUPA -
fcst_var RH -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/hr${hour}/${domainRes
olution}_${variation}_ua_UA8_RH_hr${hour}.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P910-875 -obtype ADPUPA -
fcst_var RH -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/hr${hour}/${domainRes
olution}_${variation}_ua_UA9_RH_hr${hour}.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P1010-910 -obtype ADPUPA -
fcst_var RH -fcst_lead ${hour}0000
```

```
echo "Calculating Upper Air Height Statistics"

stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/hr${hour}/${domainRes
olution}_${variation}_ua_UA1_HGT_hr${hour}.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P225-100 -obtype ADPUPA -
fcst_var HGT -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/hr${hour}/${domainRes
olution}_${variation}_ua_UA3_HGT_hr${hour}.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P425-225 -obtype ADPUPA -
fcst_var HGT -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/hr${hour}/${domainRes
olution}_${variation}_ua_UA5_HGT_hr${hour}.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P625-425 -obtype ADPUPA -
fcst_var HGT -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/hr${hour}/${domainRes
olution}_${variation}_ua_UA6_HGT_hr${hour}.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P775-625 -obtype ADPUPA -
fcst_var HGT -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/hr${hour}/${domainRes
olution}_${variation}_ua_UA7_HGT_hr${hour}.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P875-775 -obtype ADPUPA -
fcst_var HGT -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/hr${hour}/${domainRes
olution}_${variation}_ua_UA8_HGT_hr${hour}.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P910-875 -obtype ADPUPA -
fcst_var HGT -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/hr${hour}/${domainRes
olution}_${variation}_ua_UA9_HGT_hr${hour}.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P1010-910 -obtype ADPUPA -
fcst_var HGT -fcst_lead ${hour}0000

echo "Calculating Upper Air U-Wind Component Statistics"

stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/hr${hour}/${domainRes
olution}_${variation}_ua_UA1_UGRD_hr${hour}.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P225-100 -obtype ADPUPA -
fcst_var UGRD -fcst_lead ${hour}0000
```

```
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/hr${hour}/${domainRes
olution}_${variation}_ua_UA3_UGRD_hr${hour}.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P425-225 -obtype ADPUPA -
fcst_var UGRD -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/hr${hour}/${domainRes
olution}_${variation}_ua_UA5_UGRD_hr${hour}.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P625-425 -obtype ADPUPA -
fcst_var UGRD -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/hr${hour}/${domainRes
olution}_${variation}_ua_UA6_UGRD_hr${hour}.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P775-625 -obtype ADPUPA -
fcst_var UGRD -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/hr${hour}/${domainRes
olution}_${variation}_ua_UA7_UGRD_hr${hour}.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P875-775 -obtype ADPUPA -
fcst_var UGRD -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/hr${hour}/${domainRes
olution}_${variation}_ua_UA8_UGRD_hr${hour}.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P910-875 -obtype ADPUPA -
fcst_var UGRD -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/hr${hour}/${domainRes
olution}_${variation}_ua_UA9_UGRD_hr${hour}.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P1010-910 -obtype ADPUPA -
fcst_var UGRD -fcst_lead ${hour}0000

echo "Calculating Upper Air V-Wind Component Statistics"

stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/hr${hour}/${domainRes
olution}_${variation}_ua_UA1_VGRD_hr${hour}.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P225-100 -obtype ADPUPA -
fcst_var VGRD -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/hr${hour}/${domainRes
olution}_${variation}_ua_UA3_VGRD_hr${hour}.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P425-225 -obtype ADPUPA -
fcst_var VGRD -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/hr${hour}/${domainRes
```

```
olution}_${variation}_ua_UA5_VGRD_hr${hour}.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P625-425 -obtype ADPUPA -
fcst_var VGRD -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/hr${hour}/${domainRes
olution}_${variation}_ua_UA6_VGRD_hr${hour}.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P775-625 -obtype ADPUPA -
fcst_var VGRD -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/hr${hour}/${domainRes
olution}_${variation}_ua_UA7_VGRD_hr${hour}.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P875-775 -obtype ADPUPA -
fcst_var VGRD -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/hr${hour}/${domainRes
olution}_${variation}_ua_UA8_VGRD_hr${hour}.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P910-875 -obtype ADPUPA -
fcst_var VGRD -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/hr${hour}/${domainRes
olution}_${variation}_ua_UA9_VGRD_hr${hour}.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P1010-910 -obtype ADPUPA -
fcst_var VGRD -fcst_lead ${hour}0000

echo "Calculating Upper Air Wind Speed Statistics"

stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/hr${hour}/${domainRes
olution}_${variation}_ua_UA1_WIND_hr${hour}.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P225-100 -obtype ADPUPA -
fcst_var WIND -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/hr${hour}/${domainRes
olution}_${variation}_ua_UA3_WIND_hr${hour}.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P425-225 -obtype ADPUPA -
fcst_var WIND -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/hr${hour}/${domainRes
olution}_${variation}_ua_UA5_WIND_hr${hour}.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P625-425 -obtype ADPUPA -
fcst_var WIND -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/hr${hour}/${domainRes
olution}_${variation}_ua_UA6_WIND_hr${hour}.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P775-625 -obtype ADPUPA -
fcst_var WIND -fcst_lead ${hour}0000
```

```
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/hr${hour}/${domainRes
olution}_${variation}_ua_UA7_WIND_hr${hour}.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P875-775 -obtype ADPUPA -
fcst_var WIND -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/hr${hour}/${domainRes
olution}_${variation}_ua_UA8_WIND_hr${hour}.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P910-875 -obtype ADPUPA -
fcst_var WIND -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/hr${hour}/${domainRes
olution}_${variation}_ua_UA9_WIND_hr${hour}.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P1010-910 -obtype ADPUPA -
fcst_var WIND -fcst_lead ${hour}0000

echo "Calculating Upper Air Wind Direction Statistics"

stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/hr${hour}/${domainRes
olution}_${variation}_ua_UA1_WDIR_hr${hour}.txt -v 3 -job aggregate_stat -
line_type VL1L2 -out_line_type WDIR -obs_lev P225-100 -obtype ADPUPA -
fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/hr${hour}/${domainRes
olution}_${variation}_ua_UA3_WDIR_hr${hour}.txt -v 3 -job aggregate_stat -
line_type VL1L2 -out_line_type WDIR -obs_lev P425-225 -obtype ADPUPA -
fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/hr${hour}/${domainRes
olution}_${variation}_ua_UA5_WDIR_hr${hour}.txt -v 3 -job aggregate_stat -
line_type VL1L2 -out_line_type WDIR -obs_lev P625-425 -obtype ADPUPA -
fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/hr${hour}/${domainRes
olution}_${variation}_ua_UA6_WDIR_hr${hour}.txt -v 3 -job aggregate_stat -
line_type VL1L2 -out_line_type WDIR -obs_lev P775-625 -obtype ADPUPA -
fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/hr${hour}/${domainRes
olution}_${variation}_ua_UA7_WDIR_hr${hour}.txt -v 3 -job aggregate_stat -
line_type VL1L2 -out_line_type WDIR -obs_lev P875-775 -obtype ADPUPA -
fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/hr${hour}/${domainRes
```

```
olution}_${variation}_ua_UA8_WDIR_hr${hour}.txt -v 3 -job aggregate_stat -
line_type VL1L2 -out_line_type WDIR -obs_lev P910-875 -obtype ADPUPA -
fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/hr${hour}/${domainRes
olution}_${variation}_ua_UA9_WDIR_hr${hour}.txt -v 3 -job aggregate_stat -
line_type VL1L2 -out_line_type WDIR -obs_lev P1010-910 -obtype ADPUPA -
fcst_lead ${hour}0000
```

run_ua_afct_template_hours.sh

```
# Script Purpose: Produces hourly upper air (AIRCFT) statistics for all
# available dates using stat analysis and point stat results.
# Author: Yasmina R. Raby
# Date: 07/28/2010
# Script Name: run_ua_acft_template_hours
# Script Location: ~jraby/Scripts/Stat_Analysis_Scripts/hourly/
# Script called by: run_Stat_Analysis


hour=$1
variation=$2
domainResolution=$3

echo "Running Stat_Analysis for hour " $hour
mkdir -p ./Summary_byHour/${domainResolution}_${variation}_acft/hr${hour}

#If it is NOT a control run, then add an underbar to the WRF variation
type for the Point Stat results directories below.
if [ "$variation" != "CO" ]
      then
            var="_"$variation
      else
            var=""
fi

echo "Calculating Upper Air Temperature Statistics"

stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/hr${hour}/${domainR
esolution}_${variation}_acft_UA1_TMP_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P225-100 -obtype
AIRCFT -fcst_var TMP -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/hr${hour}/${domainR
esolution}_${variation}_acft_UA3_TMP_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P425-225 -obtype
AIRCFT -fcst_var TMP -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/hr${hour}/${domainR
esolution}_${variation}_acft_UA5_TMP_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P625-425 -obtype
AIRCFT -fcst_var TMP -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/hr${hour}/${domainR
esolution}_${variation}_acft_UA6_TMP_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P775-625 -obtype
AIRCFT -fcst_var TMP -fcst_lead ${hour}0000
```

```
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/hr${hour}/${domainR
esolution}_${variation}_acft_UA7_TMP_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P875-775 -obtype
AIRCFT -fcst_var TMP -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/hr${hour}/${domainR
esolution}_${variation}_acft_UA8_TMP_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P910-875 -obtype
AIRCFT -fcst_var TMP -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/hr${hour}/${domainR
esolution}_${variation}_acft_UA9_TMP_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P1010-910 -
obtype AIRCFT -fcst_var TMP -fcst_lead ${hour}0000

echo "Calculating Upper Air Dewpoint Temperature Statistics"

stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/hr${hour}/${domainR
esolution}_${variation}_acft_UA1_DPT_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P225-100 -obtype
AIRCFT -fcst_var DPT -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/hr${hour}/${domainR
esolution}_${variation}_acft_UA3_DPT_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P425-225 -obtype
AIRCFT -fcst_var DPT -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/hr${hour}/${domainR
esolution}_${variation}_acft_UA5_DPT_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P625-425 -obtype
AIRCFT -fcst_var DPT -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/hr${hour}/${domainR
esolution}_${variation}_acft_UA6_DPT_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P775-625 -obtype
AIRCFT -fcst_var DPT -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/hr${hour}/${domainR
esolution}_${variation}_acft_UA7_DPT_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P875-775 -obtype
AIRCFT -fcst_var DPT -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/hr${hour}/${domainR
```

```
esolution}_${variation}_acft_UA8_DPT_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P910-875 -obtype
AIRCFT -fcst_var DPT -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/hr${hour}/${domainR
esolution}_${variation}_acft_UA9_DPT_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P1010-910 -
obtype AIRCFT -fcst_var DPT -fcst_lead ${hour}0000

echo "Calculating Upper Air Relative Humidity Statistics"

stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/hr${hour}/${domainR
esolution}_${variation}_acft_UA1_RH_hr${hour}.txt -v 3 -job aggregate_stat
-line_type MPR -out_line_type CNT -obs_lev P225-100 -obtype AIRCFT -
fcst_var RH -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/hr${hour}/${domainR
esolution}_${variation}_acft_UA3_RH_hr${hour}.txt -v 3 -job aggregate_stat
-line_type MPR -out_line_type CNT -obs_lev P425-225 -obtype AIRCFT -
fcst_var RH -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/hr${hour}/${domainR
esolution}_${variation}_acft_UA5_RH_hr${hour}.txt -v 3 -job aggregate_stat
-line_type MPR -out_line_type CNT -obs_lev P625-425 -obtype AIRCFT -
fcst_var RH -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/hr${hour}/${domainR
esolution}_${variation}_acft_UA6_RH_hr${hour}.txt -v 3 -job aggregate_stat
-line_type MPR -out_line_type CNT -obs_lev P775-625 -obtype AIRCFT -
fcst_var RH -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/hr${hour}/${domainR
esolution}_${variation}_acft_UA7_RH_hr${hour}.txt -v 3 -job aggregate_stat
-line_type MPR -out_line_type CNT -obs_lev P875-775 -obtype AIRCFT -
fcst_var RH -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/hr${hour}/${domainR
esolution}_${variation}_acft_UA8_RH_hr${hour}.txt -v 3 -job aggregate_stat
-line_type MPR -out_line_type CNT -obs_lev P910-875 -obtype AIRCFT -
fcst_var RH -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/hr${hour}/${domainR
esolution}_${variation}_acft_UA9_RH_hr${hour}.txt -v 3 -job aggregate_stat
-line_type MPR -out_line_type CNT -obs_lev P1010-910 -obtype AIRCFT -
fcst_var RH -fcst_lead ${hour}0000
```

```
echo "Calculating Upper Air Height Statistics"

stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/hr${hour}/${domainR
esolution}_${variation}_acft_UA1_HGT_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P225-100 -obtype
AIRCFT -fcst_var HGT -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/hr${hour}/${domainR
esolution}_${variation}_acft_UA3_HGT_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P425-225 -obtype
AIRCFT -fcst_var HGT -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/hr${hour}/${domainR
esolution}_${variation}_acft_UA5_HGT_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P625-425 -obtype
AIRCFT -fcst_var HGT -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/hr${hour}/${domainR
esolution}_${variation}_acft_UA6_HGT_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P775-625 -obtype
AIRCFT -fcst_var HGT -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/hr${hour}/${domainR
esolution}_${variation}_acft_UA7_HGT_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P875-775 -obtype
AIRCFT -fcst_var HGT -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/hr${hour}/${domainR
esolution}_${variation}_acft_UA8_HGT_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P910-875 -obtype
AIRCFT -fcst_var HGT -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/hr${hour}/${domainR
esolution}_${variation}_acft_UA9_HGT_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P1010-910 -
obtype AIRCFT -fcst_var HGT -fcst_lead ${hour}0000

echo "Calculating Upper Air U-Wind Component Statistics"

stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/hr${hour}/${domainR
esolution}_${variation}_acft_UA1_UGRD_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P225-100 -obtype
AIRCFT -fcst_var UGRD -fcst_lead ${hour}0000
```

```
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/hr${hour}/${domainR
esolution}_${variation}_acft_UA3_UGRD_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P425-225 -obtype
AIRCFT -fcst_var UGRD -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/hr${hour}/${domainR
esolution}_${variation}_acft_UA5_UGRD_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P625-425 -obtype
AIRCFT -fcst_var UGRD -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/hr${hour}/${domainR
esolution}_${variation}_acft_UA6_UGRD_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P775-625 -obtype
AIRCFT -fcst_var UGRD -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/hr${hour}/${domainR
esolution}_${variation}_acft_UA7_UGRD_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P875-775 -obtype
AIRCFT -fcst_var UGRD -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/hr${hour}/${domainR
esolution}_${variation}_acft_UA8_UGRD_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P910-875 -obtype
AIRCFT -fcst_var UGRD -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/hr${hour}/${domainR
esolution}_${variation}_acft_UA9_UGRD_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P1010-910 -
obtype AIRCFT -fcst_var UGRD -fcst_lead ${hour}0000

echo "Calculating Upper Air V-Wind Component Statistics"

stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/hr${hour}/${domainR
esolution}_${variation}_acft_UA1_VGRD_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P225-100 -obtype
AIRCFT -fcst_var VGRD -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/hr${hour}/${domainR
esolution}_${variation}_acft_UA3_VGRD_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P425-225 -obtype
AIRCFT -fcst_var VGRD -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/hr${hour}/${domainR
```

```
esolution}_${variation}_acft_UA5_VGRD_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P625-425 -obtype
AIRCFT -fcst_var VGRD -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/hr${hour}/${domainR
esolution}_${variation}_acft_UA6_VGRD_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P775-625 -obtype
AIRCFT -fcst_var VGRD -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/hr${hour}/${domainR
esolution}_${variation}_acft_UA7_VGRD_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P875-775 -obtype
AIRCFT -fcst_var VGRD -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/hr${hour}/${domainR
esolution}_${variation}_acft_UA8_VGRD_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P910-875 -obtype
AIRCFT -fcst_var VGRD -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/hr${hour}/${domainR
esolution}_${variation}_acft_UA9_VGRD_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P1010-910 -
obtype AIRCFT -fcst_var VGRD -fcst_lead ${hour}0000

echo "Calculating Upper Air Wind Speed Statistics"

stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/hr${hour}/${domainR
esolution}_${variation}_acft_UA1_WIND_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P225-100 -obtype
AIRCFT -fcst_var WIND -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/hr${hour}/${domainR
esolution}_${variation}_acft_UA3_WIND_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P425-225 -obtype
AIRCFT -fcst_var WIND -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/hr${hour}/${domainR
esolution}_${variation}_acft_UA5_WIND_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P625-425 -obtype
AIRCFT -fcst_var WIND -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/hr${hour}/${domainR
esolution}_${variation}_acft_UA6_WIND_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P775-625 -obtype
AIRCFT -fcst_var WIND -fcst_lead ${hour}0000
```

```
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/hr${hour}/${domainR
esolution}_${variation}_acft_UA7_WIND_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P875-775 -obtype
AIRCFT -fcst_var WIND -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/hr${hour}/${domainR
esolution}_${variation}_acft_UA8_WIND_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P910-875 -obtype
AIRCFT -fcst_var WIND -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/hr${hour}/${domainR
esolution}_${variation}_acft_UA9_WIND_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P1010-910 -
obtype AIRCFT -fcst_var WIND -fcst_lead ${hour}0000

echo "Calculating Upper Air Wind Direction Statistics"

stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/hr${hour}/${domainR
esolution}_${variation}_acft_UA1_WDIR_hr${hour}.txt -v 3 -job
aggregate_stat -line_type VL1L2 -out_line_type WDIR -obs_lev P225-100 -
obtype AIRCFT -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/hr${hour}/${domainR
esolution}_${variation}_acft_UA3_WDIR_hr${hour}.txt -v 3 -job
aggregate_stat -line_type VL1L2 -out_line_type WDIR -obs_lev P425-225 -
obtype AIRCFT -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/hr${hour}/${domainR
esolution}_${variation}_acft_UA5_WDIR_hr${hour}.txt -v 3 -job
aggregate_stat -line_type VL1L2 -out_line_type WDIR -obs_lev P625-425 -
obtype AIRCFT -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/hr${hour}/${domainR
esolution}_${variation}_acft_UA6_WDIR_hr${hour}.txt -v 3 -job
aggregate_stat -line_type VL1L2 -out_line_type WDIR -obs_lev P775-625 -
obtype AIRCFT -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/hr${hour}/${domainR
esolution}_${variation}_acft_UA7_WDIR_hr${hour}.txt -v 3 -job
aggregate_stat -line_type VL1L2 -out_line_type WDIR -obs_lev P875-775 -
obtype AIRCFT -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/hr${hour}/${domainR
```

```
esolution}_${variation}_acft_UA8_WDIR_hr${hour}.txt -v 3 -job
aggregate_stat -line_type VL1L2 -out_line_type WDIR -obs_lev P910-875 -
obtype AIRCFT -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/hr${hour}/${domainR
esolution}_${variation}_acft_UA9_WDIR_hr${hour}.txt -v 3 -job
aggregate_stat -line_type VL1L2 -out_line_type WDIR -obs_lev P1010-910 -
obtype AIRCFT -fcst_lead ${hour}0000
```

run_ua_aircar_template_hours.sh

```
# Script Purpose: Produces hourly upper air (AIRCAR) statistics for all
# available dates using stat analysis and point stat results.
# Author: Yasmina R. Raby
# Date: 07/28/2010
# Script Name: run_ua_aircar_template_hours
# Script Location: ~jraby/Scripts/Stat_Analysis_Scripts/hourly/
# Script called by: run_Stat_Analysis

hour=$1
variation=$2
domainResolution=$3

echo "Running Stat_Analysis for hour " ${hour}
mkdir -p
./Summary_byHour/${domainResolution}_${variation}_aircar/hr${hour}

#If it is NOT a control run, then add an underbar to the WRF variation
type for the Point Stat results directories below.
if [ "${variation}" != "CO" ]
      then
            var=_${variation}
      else
            var=""
fi

echo "Calculating Upper Air Temperature Statistics"

stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/hr${hour}/${domai
nResolution}_${variation}_aircar_UA1_TMP_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P225-100 -obtype
AIRCAR -fcst_var TMP -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/hr${hour}/${domai
nResolution}_${variation}_aircar_UA3_TMP_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P425-225 -obtype
AIRCAR -fcst_var TMP -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/hr${hour}/${domai
nResolution}_${variation}_aircar_UA5_TMP_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P625-425 -obtype
AIRCAR -fcst_var TMP -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/hr${hour}/${domai
nResolution}_${variation}_aircar_UA6_TMP_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P775-625 -obtype
AIRCAR -fcst_var TMP -fcst_lead ${hour}0000
```

```
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/hr${hour}/${domai
nResolution}_${variation}_aircar_UA7_TMP_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P875-775 -obtype
AIRCAR -fcst_var TMP -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/hr${hour}/${domai
nResolution}_${variation}_aircar_UA8_TMP_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P910-875 -obtype
AIRCAR -fcst_var TMP -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/hr${hour}/${domai
nResolution}_${variation}_aircar_UA9_TMP_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P1010-910 -
obtype AIRCAR -fcst_var TMP -fcst_lead ${hour}0000

echo "Calculating Upper Air Dewpoint Temperature Statistics"

stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/hr${hour}/${domai
nResolution}_${variation}_aircar_UA1_DPT_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P225-100 -obtype
AIRCAR -fcst_var DPT -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/hr${hour}/${domai
nResolution}_${variation}_aircar_UA3_DPT_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P425-225 -obtype
AIRCAR -fcst_var DPT -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/hr${hour}/${domai
nResolution}_${variation}_aircar_UA5_DPT_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P625-425 -obtype
AIRCAR -fcst_var DPT -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/hr${hour}/${domai
nResolution}_${variation}_aircar_UA6_DPT_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P775-625 -obtype
AIRCAR -fcst_var DPT -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/hr${hour}/${domai
nResolution}_${variation}_aircar_UA7_DPT_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P875-775 -obtype
AIRCAR -fcst_var DPT -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/hr${hour}/${domai
```

```
nResolution}_${variation}_aircar_UA8_DPT_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P910-875 -obtype
AIRCAR -fcst_var DPT -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/hr${hour}/${domai
nResolution}_${variation}_aircar_UA9_DPT_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P1010-910 -
obtype AIRCAR -fcst_var DPT -fcst_lead ${hour}0000

echo "Calculating Upper Air Relative Humidity Statistics"

stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/hr${hour}/${domai
nResolution}_${variation}_aircar_UA1_RH_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P225-100 -obtype
AIRCAR -fcst_var RH -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/hr${hour}/${domai
nResolution}_${variation}_aircar_UA3_RH_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P425-225 -obtype
AIRCAR -fcst_var RH -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/hr${hour}/${domai
nResolution}_${variation}_aircar_UA5_RH_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P625-425 -obtype
AIRCAR -fcst_var RH -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/hr${hour}/${domai
nResolution}_${variation}_aircar_UA6_RH_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P775-625 -obtype
AIRCAR -fcst_var RH -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/hr${hour}/${domai
nResolution}_${variation}_aircar_UA7_RH_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P875-775 -obtype
AIRCAR -fcst_var RH -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/hr${hour}/${domai
nResolution}_${variation}_aircar_UA8_RH_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P910-875 -obtype
AIRCAR -fcst_var RH -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/hr${hour}/${domai
nResolution}_${variation}_aircar_UA9_RH_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P1010-910 -
obtype AIRCAR -fcst_var RH -fcst_lead ${hour}0000
```

```
echo "Calculating Upper Air Height Statistics"

stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/hr${hour}/${domai
nResolution}_${variation}_aircar_UA1_HGT_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P225-100 -obtype
AIRCAR -fcst_var HGT -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/hr${hour}/${domai
nResolution}_${variation}_aircar_UA3_HGT_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P425-225 -obtype
AIRCAR -fcst_var HGT -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/hr${hour}/${domai
nResolution}_${variation}_aircar_UA5_HGT_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P625-425 -obtype
AIRCAR -fcst_var HGT -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/hr${hour}/${domai
nResolution}_${variation}_aircar_UA6_HGT_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P775-625 -obtype
AIRCAR -fcst_var HGT -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/hr${hour}/${domai
nResolution}_${variation}_aircar_UA7_HGT_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P875-775 -obtype
AIRCAR -fcst_var HGT -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/hr${hour}/${domai
nResolution}_${variation}_aircar_UA8_HGT_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P910-875 -obtype
AIRCAR -fcst_var HGT -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/hr${hour}/${domai
nResolution}_${variation}_aircar_UA9_HGT_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P1010-910 -
obtype AIRCAR -fcst_var HGT -fcst_lead ${hour}0000

echo "Calculating Upper Air U-Wind Component Statistics"

stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/hr${hour}/${domai
nResolution}_${variation}_aircar_UA1_UGRD_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P225-100 -obtype
AIRCAR -fcst_var UGRD -fcst_lead ${hour}0000
```

```
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/hr${hour}/${domai
nResolution}_${variation}_aircar_UA3_UGRD_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P425-225 -obtype
AIRCAR -fcst_var UGRD -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/hr${hour}/${domai
nResolution}_${variation}_aircar_UA5_UGRD_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P625-425 -obtype
AIRCAR -fcst_var UGRD -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/hr${hour}/${domai
nResolution}_${variation}_aircar_UA6_UGRD_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P775-625 -obtype
AIRCAR -fcst_var UGRD -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/hr${hour}/${domai
nResolution}_${variation}_aircar_UA7_UGRD_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P875-775 -obtype
AIRCAR -fcst_var UGRD -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/hr${hour}/${domai
nResolution}_${variation}_aircar_UA8_UGRD_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P910-875 -obtype
AIRCAR -fcst_var UGRD -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/hr${hour}/${domai
nResolution}_${variation}_aircar_UA9_UGRD_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P1010-910 -
obtype AIRCAR -fcst_var UGRD -fcst_lead ${hour}0000

echo "Calculating Upper Air V-Wind Component Statistics"

stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/hr${hour}/${domai
nResolution}_${variation}_aircar_UA1_VGRD_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P225-100 -obtype
AIRCAR -fcst_var VGRD -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/hr${hour}/${domai
nResolution}_${variation}_aircar_UA3_VGRD_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P425-225 -obtype
AIRCAR -fcst_var VGRD -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/hr${hour}/${domai
```

```
nResolution}_${variation}_aircar_UA5_VGRD_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P625-425 -obtype
AIRCAR -fcst_var VGRD -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/hr${hour}/${domai
nResolution}_${variation}_aircar_UA6_VGRD_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P775-625 -obtype
AIRCAR -fcst_var VGRD -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/hr${hour}/${domai
nResolution}_${variation}_aircar_UA7_VGRD_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P875-775 -obtype
AIRCAR -fcst_var VGRD -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/hr${hour}/${domai
nResolution}_${variation}_aircar_UA8_VGRD_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P910-875 -obtype
AIRCAR -fcst_var VGRD -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/hr${hour}/${domai
nResolution}_${variation}_aircar_UA9_VGRD_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P1010-910 -
obtype AIRCAR -fcst_var VGRD -fcst_lead ${hour}0000

echo "Calculating Upper Air Wind Speed Statistics"

stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/hr${hour}/${domai
nResolution}_${variation}_aircar_UA1_WIND_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P225-100 -obtype
AIRCAR -fcst_var WIND -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/hr${hour}/${domai
nResolution}_${variation}_aircar_UA3_WIND_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P425-225 -obtype
AIRCAR -fcst_var WIND -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/hr${hour}/${domai
nResolution}_${variation}_aircar_UA5_WIND_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P625-425 -obtype
AIRCAR -fcst_var WIND -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/hr${hour}/${domai
nResolution}_${variation}_aircar_UA6_WIND_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P775-625 -obtype
AIRCAR -fcst_var WIND -fcst_lead ${hour}0000
```

```
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/hr${hour}/${domai
nResolution}_${variation}_aircar_UA7_WIND_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P875-775 -obtype
AIRCAR -fcst_var WIND -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/hr${hour}/${domai
nResolution}_${variation}_aircar_UA8_WIND_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P910-875 -obtype
AIRCAR -fcst_var WIND -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/hr${hour}/${domai
nResolution}_${variation}_aircar_UA9_WIND_hr${hour}.txt -v 3 -job
aggregate_stat -line_type MPR -out_line_type CNT -obs_lev P1010-910 -
obtype AIRCAR -fcst_var WIND -fcst_lead ${hour}0000

echo "Calculating Upper Air Wind Direction Statistics"

stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/hr${hour}/${domai
nResolution}_${variation}_aircar_UA1_WDIR_hr${hour}.txt -v 3 -job
aggregate_stat -line_type VL1L2 -out_line_type WDIR -obs_lev P225-100 -
obtype AIRCAR -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/hr${hour}/${domai
nResolution}_${variation}_aircar_UA3_WDIR_hr${hour}.txt -v 3 -job
aggregate_stat -line_type VL1L2 -out_line_type WDIR -obs_lev P425-225 -
obtype AIRCAR -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/hr${hour}/${domai
nResolution}_${variation}_aircar_UA5_WDIR_hr${hour}.txt -v 3 -job
aggregate_stat -line_type VL1L2 -out_line_type WDIR -obs_lev P625-425 -
obtype AIRCAR -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/hr${hour}/${domai
nResolution}_${variation}_aircar_UA6_WDIR_hr${hour}.txt -v 3 -job
aggregate_stat -line_type VL1L2 -out_line_type WDIR -obs_lev P775-625 -
obtype AIRCAR -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/hr${hour}/${domai
nResolution}_${variation}_aircar_UA7_WDIR_hr${hour}.txt -v 3 -job
aggregate_stat -line_type VL1L2 -out_line_type WDIR -obs_lev P875-775 -
obtype AIRCAR -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/hr${hour}/${domai
```

```
nResolution}_${variation}_aircar_UA8_WDIR_hr${hour}.txt -v 3 -job
aggregate_stat -line_type VL1L2 -out_line_type WDIR -obs_lev P910-875 -
obtype AIRCAR -fcst_lead ${hour}0000
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/hr${hour}/${domai
nResolution}_${variation}_aircar_UA9_WDIR_hr${hour}.txt -v 3 -job
aggregate_stat -line_type VL1L2 -out_line_type WDIR -obs_lev P1010-910 -
obtype AIRCAR -fcst_lead ${hour}0000
```

run_sfc_template_all_hours.sh

```
# Script Purpose: Uses stat analysis to analyze point stat surface data
# for all available dates and all hours.
# Author: Yasmina R. Raby
# Date: 07/22/2010
# Script Name: run_sfc_template_all_hours
# Script Location: ~jraby/Scripts/Stat_Analysis_Scripts/all_hours
# Script called by: run_Stat_Analysis


variation=$1
domainResolution=$2

echo "Running Stat_Analysis"
mkdir -p ./Summary_byHour/${domainResolution}_${variation}_sfc/allhrs

#If it is NOT a control run, then add an underbar to the WRF variation
type for the Point Stat results directories below.
if [ "$variation" != "CO" ]
      then
            var="_"$variation
      else
            var=""
fi

echo "Calculating Surface Statistics"

stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_sfc/allhrs/${domainResol
ution}_${variation}_sfc_allhrs_SFC_TMP.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obtype ADPSFC -fcst_var TMP -fcst_lev Z2
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_sfc/allhrs/${domainResol
ution}_${variation}_sfc_allhrs_SFC_DPT.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obtype ADPSFC -fcst_var DPT -fcst_lev Z2
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_sfc/allhrs/${domainResol
ution}_${variation}_sfc_allhrs_SFC_RH.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obtype ADPSFC -fcst_var RH -fcst_lev Z2
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_sfc/allhrs/${domainResol
ution}_${variation}_sfc_allhrs_SFC_PRMSL.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obtype ADPSFC -fcst_var PRMSL -fcst_lev
Z0
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_sfc/allhrs/${domainResol
ution}_${variation}_sfc_allhrs_SFC_HGT.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obtype ADPSFC -fcst_var HGT
```

```
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_sfc/allhrs/${domainResol
ution}_${variation}_sfc_allhrs_SFC_UGRD.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obtype ADPSFC -fcst_var UGRD -fcst_lev
Z10
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_sfc/allhrs/${domainResol
ution}_${variation}_sfc_allhrs_SFC_VGRD.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obtype ADPSFC -fcst_var VGRD -fcst_lev
Z10
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_sfc/allhrs/${domainResol
ution}_${variation}_sfc_allhrs_SFC_WIND.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obtype ADPSFC -fcst_var WIND -fcst_lev
Z10
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_sfc/allhrs/${domainResol
ution}_${variation}_sfc_allhrs_SFC_WDIR.txt -v 3 -job aggregate_stat -
line_type VL1L2 -out_line_type WDIR -obtype ADPSFC -fcst_lev Z10
```

run_ua_template_all_hours.sh

```
# Script Purpose: Uses stat analysis to collect information from point
# stat files in order to analyze ADPUPA data. It aggregates data from all
# available dates and all available hours.
# Author: Yasmina R. Raby
# Date: 07/22/2010
# Script Name: run_ua_template_all_hours
# Script Location: ~jraby/Scripts/Stat_Analysis_Scripts/all_hours
# Script called by: run_Stat_Analysis

variation=$1
domainResolution=$2

echo "Running Stat_Analysis"
mkdir -p ./Summary_byHour/${domainResolution}_${variation}_ua/allhrs

#If it is NOT a control run, then add an underbar to the WRF variation
type for the Point Stat results directories below.
if [ "$variation" != "CO" ]
      then
            var="_"$variation
      else
            var=""
fi

echo "Calculating Upper Air Temperature Statistics"

stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/allhrs/${domainResolu
tion}_${variation}_ua_allhrs_UA1_TMP.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P225-100 -obtype ADPUPA -
fcst_var TMP
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/allhrs/${domainResolu
tion}_${variation}_ua_allhrs_UA3_TMP.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P425-225 -obtype ADPUPA -
fcst_var TMP
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/allhrs/${domainResolu
tion}_${variation}_ua_allhrs_UA5_TMP.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P625-425 -obtype ADPUPA -
fcst_var TMP
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/allhrs/${domainResolu
tion}_${variation}_ua_allhrs_UA6_TMP.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P775-625 -obtype ADPUPA -
fcst_var TMP
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
```

```
./Summary_byHour/${domainResolution}_${variation}_ua/allhrs/${domainResolu
tion}_${variation}_ua_allhrs_UA7_TMP.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P875-775 -obtype ADPUPA -
fcst_var TMP
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/allhrs/${domainResolu
tion}_${variation}_ua_allhrs_UA8_TMP.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P910-875 -obtype ADPUPA -
fcst_var TMP
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/allhrs/${domainResolu
tion}_${variation}_ua_allhrs_UA9_TMP.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P1010-910 -obtype ADPUPA -
fcst_var TMP

echo "Calculating Upper Air Dewpoint Temperature Statistics"

stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/allhrs/${domainResolu
tion}_${variation}_ua_allhrs_UA1_DPT.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P225-100 -obtype ADPUPA -
fcst_var DPT
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/allhrs/${domainResolu
tion}_${variation}_ua_allhrs_UA3_DPT.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P425-225 -obtype ADPUPA -
fcst_var DPT
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/allhrs/${domainResolu
tion}_${variation}_ua_allhrs_UA5_DPT.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P625-425 -obtype ADPUPA -
fcst_var DPT
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/allhrs/${domainResolu
tion}_${variation}_ua_allhrs_UA6_DPT.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P775-625 -obtype ADPUPA -
fcst_var DPT
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/allhrs/${domainResolu
tion}_${variation}_ua_allhrs_UA7_DPT.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P875-775 -obtype ADPUPA -
fcst_var DPT
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/allhrs/${domainResolu
tion}_${variation}_ua_allhrs_UA8_DPT.txt -v 3 -job aggregate_stat -
```

```
line_type MPR -out_line_type CNT -obs_lev P910-875 -obtype ADPUPA -
fcst_var DPT
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/allhrs/${domainResolu
tion}_${variation}_ua_allhrs_UA9_DPT.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P1010-910 -obtype ADPUPA -
fcst_var DPT

echo "Calculating Upper Air Relative Humidity Statistics"

stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/allhrs/${domainResolu
tion}_${variation}_ua_allhrs_UA1_RH.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P225-100 -obtype ADPUPA -
fcst_var RH
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/allhrs/${domainResolu
tion}_${variation}_ua_allhrs_UA3_RH.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P425-225 -obtype ADPUPA -
fcst_var RH
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/allhrs/${domainResolu
tion}_${variation}_ua_allhrs_UA5_RH.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P625-425 -obtype ADPUPA -
fcst_var RH
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/allhrs/${domainResolu
tion}_${variation}_ua_allhrs_UA6_RH.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P775-625 -obtype ADPUPA -
fcst_var RH
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/allhrs/${domainResolu
tion}_${variation}_ua_allhrs_UA7_RH.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P875-775 -obtype ADPUPA -
fcst_var RH
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/allhrs/${domainResolu
tion}_${variation}_ua_allhrs_UA8_RH.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P910-875 -obtype ADPUPA -
fcst_var RH
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/allhrs/${domainResolu
tion}_${variation}_ua_allhrs_UA9_RH.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P1010-910 -obtype ADPUPA -
fcst_var RH
```

```
echo "Calculating Upper Air Height Statistics"

stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/allhrs/${domainResolu
tion}_${variation}_ua_allhrs_UA1_HGT.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P225-100 -obtype ADPUPA -
fcst_var HGT
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/allhrs/${domainResolu
tion}_${variation}_ua_allhrs_UA3_HGT.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P425-225 -obtype ADPUPA -
fcst_var HGT
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/allhrs/${domainResolu
tion}_${variation}_ua_allhrs_UA5_HGT.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P625-425 -obtype ADPUPA -
fcst_var HGT
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/allhrs/${domainResolu
tion}_${variation}_ua_allhrs_UA6_HGT.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P775-625 -obtype ADPUPA -
fcst_var HGT
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/allhrs/${domainResolu
tion}_${variation}_ua_allhrs_UA7_HGT.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P875-775 -obtype ADPUPA -
fcst_var HGT
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/allhrs/${domainResolu
tion}_${variation}_ua_allhrs_UA8_HGT.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P910-875 -obtype ADPUPA -
fcst_var HGT
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/allhrs/${domainResolu
tion}_${variation}_ua_allhrs_UA9_HGT.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P1010-910 -obtype ADPUPA -
fcst_var HGT

echo "Calculating Upper Air U-Wind Component Statistics"

stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/allhrs/${domainResolu
tion}_${variation}_ua_allhrs_UA1_UGRD.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P225-100 -obtype ADPUPA -
fcst_var UGRD
```

```
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/allhrs/${domainResolu
tion}_${variation}_ua_allhrs_UA3_UGRD.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P425-225 -obtype ADPUPA -
fcst_var UGRD
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/allhrs/${domainResolu
tion}_${variation}_ua_allhrs_UA5_UGRD.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P625-425 -obtype ADPUPA -
fcst_var UGRD
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/allhrs/${domainResolu
tion}_${variation}_ua_allhrs_UA6_UGRD.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P775-625 -obtype ADPUPA -
fcst_var UGRD
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/allhrs/${domainResolu
tion}_${variation}_ua_allhrs_UA7_UGRD.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P875-775 -obtype ADPUPA -
fcst_var UGRD
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/allhrs/${domainResolu
tion}_${variation}_ua_allhrs_UA8_UGRD.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P910-875 -obtype ADPUPA -
fcst_var UGRD
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/allhrs/${domainResolu
tion}_${variation}_ua_allhrs_UA9_UGRD.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P1010-910 -obtype ADPUPA -
fcst_var UGRD

echo "Calculating Upper Air V-Wind Component Statistics"

stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/allhrs/${domainResolu
tion}_${variation}_ua_allhrs_UA1_VGRD.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P225-100 -obtype ADPUPA -
fcst_var VGRD
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/allhrs/${domainResolu
tion}_${variation}_ua_allhrs_UA3_VGRD.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P425-225 -obtype ADPUPA -
fcst_var VGRD
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/allhrs/${domainResolu
```

```
tion}_${variation}_ua_allhrs_UA5_VGRD.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P625-425 -obtype ADPUPA -
fcst_var VGRD
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/allhrs/${domainResolu
tion}_${variation}_ua_allhrs_UA6_VGRD.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P775-625 -obtype ADPUPA -
fcst_var VGRD
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/allhrs/${domainResolu
tion}_${variation}_ua_allhrs_UA7_VGRD.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P875-775 -obtype ADPUPA -
fcst_var VGRD
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/allhrs/${domainResolu
tion}_${variation}_ua_allhrs_UA8_VGRD.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P910-875 -obtype ADPUPA -
fcst_var VGRD
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/allhrs/${domainResolu
tion}_${variation}_ua_allhrs_UA9_VGRD.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P1010-910 -obtype ADPUPA -
fcst_var VGRD

echo "Calculating Upper Air Wind Speed Statistics"

stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/allhrs/${domainResolu
tion}_${variation}_ua_allhrs_UA1_WIND.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P225-100 -obtype ADPUPA -
fcst_var WIND
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/allhrs/${domainResolu
tion}_${variation}_ua_allhrs_UA3_WIND.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P425-225 -obtype ADPUPA -
fcst_var WIND
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/allhrs/${domainResolu
tion}_${variation}_ua_allhrs_UA5_WIND.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P625-425 -obtype ADPUPA -
fcst_var WIND
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/allhrs/${domainResolu
tion}_${variation}_ua_allhrs_UA6_WIND.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P775-625 -obtype ADPUPA -
fcst_var WIND
```

```
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/allhrs/${domainResolu
tion}_${variation}_ua_allhrs_UA7_WIND.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P875-775 -obtype ADPUPA -
fcst_var WIND
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/allhrs/${domainResolu
tion}_${variation}_ua_allhrs_UA8_WIND.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P910-875 -obtype ADPUPA -
fcst_var WIND
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/allhrs/${domainResolu
tion}_${variation}_ua_allhrs_UA9_WIND.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P1010-910 -obtype ADPUPA -
fcst_var WIND

echo "Calculating Upper Air Wind Direction Statistics"

stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/allhrs/${domainResolu
tion}_${variation}_ua_allhrs_UA1_WDIR.txt -v 3 -job aggregate_stat -
line_type VL1L2 -out_line_type WDIR -obs_lev P225-100 -obtype ADPUPA
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/allhrs/${domainResolu
tion}_${variation}_ua_allhrs_UA3_WDIR.txt -v 3 -job aggregate_stat -
line_type VL1L2 -out_line_type WDIR -obs_lev P425-225 -obtype ADPUPA
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/allhrs/${domainResolu
tion}_${variation}_ua_allhrs_UA5_WDIR.txt -v 3 -job aggregate_stat -
line_type VL1L2 -out_line_type WDIR -obs_lev P625-425 -obtype ADPUPA
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/allhrs/${domainResolu
tion}_${variation}_ua_allhrs_UA6_WDIR.txt -v 3 -job aggregate_stat -
line_type VL1L2 -out_line_type WDIR -obs_lev P775-625 -obtype ADPUPA
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/allhrs/${domainResolu
tion}_${variation}_ua_allhrs_UA7_WDIR.txt -v 3 -job aggregate_stat -
line_type VL1L2 -out_line_type WDIR -obs_lev P875-775 -obtype ADPUPA
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/allhrs/${domainResolu
tion}_${variation}_ua_allhrs_UA8_WDIR.txt -v 3 -job aggregate_stat -
line_type VL1L2 -out_line_type WDIR -obs_lev P910-875 -obtype ADPUPA
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_ua/allhrs/${domainResolu
```

```
tion}_${variation}_ua_allhrs_UA9_WDIR.txt -v 3 -job aggregate_stat -
line_type VL1L2 -out_line_type WDIR -obs_lev P1010-910 -obtype ADPUPA
```

run_acft_template_all_hours.sh

```
# Script Purpose: Uses stat analysis to collect information from point
# stat files in order to analyze AIRCFT data. It aggregates data from all
# available dates and all available hours.
# Author: Yasmina R. Raby
# Date: 07/22/2010
# Script Name: run_acft_template_all_hours
# Script Location: ~jraby/Scripts/Stat_Analysis_Scripts/all_hours/
# Script called by: run_Stat_Analysis

variation=$1
domainResolution=$2

echo "Running Stat_Analysis"
mkdir -p ./Summary_byHour/${domainResolution}_${variation}_acft/allhrs

#If it is NOT a control run, then add an underbar to the WRF variation
type for the Point Stat results directories below.
if [ "$variation" != "CO" ]
      then
            var="_"$variation
      else
            var=""
fi

echo "Calculating Upper Air Temperature Statistics"

stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/allhrs/${domainReso
lution}_${variation}_acft_allhrs_UA1_TMP.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P225-100 -obtype AIRCFT -
fcst_var TMP
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/allhrs/${domainReso
lution}_${variation}_acft_allhrs_UA3_TMP.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P425-225 -obtype AIRCFT -
fcst_var TMP
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/allhrs/${domainReso
lution}_${variation}_acft_allhrs_UA5_TMP.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P625-425 -obtype AIRCFT -
fcst_var TMP
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/allhrs/${domainReso
lution}_${variation}_acft_allhrs_UA6_TMP.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P775-625 -obtype AIRCFT -
fcst_var TMP
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
```

```
./Summary_byHour/${domainResolution}_${variation}_acft/allhrs/${domainReso
lution}_${variation}_acft_allhrs_UA7_TMP.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P875-775 -obtype AIRCFT -
fcst_var TMP
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/allhrs/${domainReso
lution}_${variation}_acft_allhrs_UA8_TMP.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P910-875 -obtype AIRCFT -
fcst_var TMP
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/allhrs/${domainReso
lution}_${variation}_acft_allhrs_UA9_TMP.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P1010-910 -obtype AIRCFT -
fcst_var TMP

echo "Calculating Upper Air Dewpoint Statistics"

stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/allhrs/${domainReso
lution}_${variation}_acft_allhrs_UA1_DPT.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P225-100 -obtype AIRCFT -
fcst_var DPT
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/allhrs/${domainReso
lution}_${variation}_acft_allhrs_UA3_DPT.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P425-225 -obtype AIRCFT -
fcst_var DPT
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/allhrs/${domainReso
lution}_${variation}_acft_allhrs_UA5_DPT.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P625-425 -obtype AIRCFT -
fcst_var DPT
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/allhrs/${domainReso
lution}_${variation}_acft_allhrs_UA6_DPT.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P775-625 -obtype AIRCFT -
fcst_var DPT
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/allhrs/${domainReso
lution}_${variation}_acft_allhrs_UA7_DPT.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P875-775 -obtype AIRCFT -
fcst_var DPT
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/allhrs/${domainReso
lution}_${variation}_acft_allhrs_UA8_DPT.txt -v 3 -job aggregate_stat -
```

```
line_type MPR -out_line_type CNT -obs_lev P910-875 -obtype AIRCFT -
fcst_var DPT
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/allhrs/${domainReso
lution}_${variation}_acft_allhrs_UA9_DPT.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P1010-910 -obtype AIRCFT -
fcst_var DPT

echo "Calculating Upper Air Relative Humidity Statistics"

stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/allhrs/${domainReso
lution}_${variation}_acft_allhrs_UA1_RH.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P225-100 -obtype AIRCFT -
fcst_var RH
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/allhrs/${domainReso
lution}_${variation}_acft_allhrs_UA3_RH.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P425-225 -obtype AIRCFT -
fcst_var RH
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/allhrs/${domainReso
lution}_${variation}_acft_allhrs_UA5_RH.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P625-425 -obtype AIRCFT -
fcst_var RH
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/allhrs/${domainReso
lution}_${variation}_acft_allhrs_UA6_RH.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P775-625 -obtype AIRCFT -
fcst_var RH
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/allhrs/${domainReso
lution}_${variation}_acft_allhrs_UA7_RH.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P875-775 -obtype AIRCFT -
fcst_var RH
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/allhrs/${domainReso
lution}_${variation}_acft_allhrs_UA8_RH.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P910-875 -obtype AIRCFT -
fcst_var RH
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/allhrs/${domainReso
lution}_${variation}_acft_allhrs_UA9_RH.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P1010-910 -obtype AIRCFT -
fcst_var RH
```

```
echo "Calculating Upper Air Height Statistics"

stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/allhrs/${domainReso
lution}_${variation}_acft_allhrs_UA1_HGT.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P225-100 -obtype AIRCFT -
fcst_var HGT
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/allhrs/${domainReso
lution}_${variation}_acft_allhrs_UA3_HGT.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P425-225 -obtype AIRCFT -
fcst_var HGT
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/allhrs/${domainReso
lution}_${variation}_acft_allhrs_UA5_HGT.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P625-425 -obtype AIRCFT -
fcst_var HGT
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/allhrs/${domainReso
lution}_${variation}_acft_allhrs_UA6_HGT.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P775-625 -obtype AIRCFT -
fcst_var HGT
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/allhrs/${domainReso
lution}_${variation}_acft_allhrs_UA7_HGT.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P875-775 -obtype AIRCFT -
fcst_var HGT
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/allhrs/${domainReso
lution}_${variation}_acft_allhrs_UA8_HGT.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P910-875 -obtype AIRCFT -
fcst_var HGT
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/allhrs/${domainReso
lution}_${variation}_acft_allhrs_UA9_HGT.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P1010-910 -obtype AIRCFT -
fcst_var HGT

echo "Calculating Upper Air U-Wind Component Statistics"

stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/allhrs/${domainReso
lution}_${variation}_acft_allhrs_UA1_UGRD.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P225-100 -obtype AIRCFT -
fcst_var UGRD
```

```
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/allhrs/${domainReso
lution}_${variation}_acft_allhrs_UA3_UGRD.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P425-225 -obtype AIRCFT -
fcst_var UGRD
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/allhrs/${domainReso
lution}_${variation}_acft_allhrs_UA5_UGRD.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P625-425 -obtype AIRCFT -
fcst_var UGRD
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/allhrs/${domainReso
lution}_${variation}_acft_allhrs_UA6_UGRD.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P775-625 -obtype AIRCFT -
fcst_var UGRD
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/allhrs/${domainReso
lution}_${variation}_acft_allhrs_UA7_UGRD.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P875-775 -obtype AIRCFT -
fcst_var UGRD
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/allhrs/${domainReso
lution}_${variation}_acft_allhrs_UA8_UGRD.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P910-875 -obtype AIRCFT -
fcst_var UGRD
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/allhrs/${domainReso
lution}_${variation}_acft_allhrs_UA9_UGRD.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P1010-910 -obtype AIRCFT -
fcst_var UGRD

echo "Calculating Upper Air V-Wind Component Statistics"

stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/allhrs/${domainReso
lution}_${variation}_acft_allhrs_UA1_VGRD.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P225-100 -obtype AIRCFT -
fcst_var VGRD
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/allhrs/${domainReso
lution}_${variation}_acft_allhrs_UA3_VGRD.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P425-225 -obtype AIRCFT -
fcst_var VGRD
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/allhrs/${domainReso
```

```
lution}_${variation}_acft_allhrs_UA5_VGRD.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P625-425 -obtype AIRCFT -
fcst_var VGRD
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/allhrs/${domainReso
lution}_${variation}_acft_allhrs_UA6_VGRD.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P775-625 -obtype AIRCFT -
fcst_var VGRD
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/allhrs/${domainReso
lution}_${variation}_acft_allhrs_UA7_VGRD.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P875-775 -obtype AIRCFT -
fcst_var VGRD
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/allhrs/${domainReso
lution}_${variation}_acft_allhrs_UA8_VGRD.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P910-875 -obtype AIRCFT -
fcst_var VGRD
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/allhrs/${domainReso
lution}_${variation}_acft_allhrs_UA9_VGRD.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P1010-910 -obtype AIRCFT -
fcst_var VGRD

echo "Calculating Upper Air Wind Speed Statistics"

stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/allhrs/${domainReso
lution}_${variation}_acft_allhrs_UA1_WIND.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P225-100 -obtype AIRCFT -
fcst_var WIND
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/allhrs/${domainReso
lution}_${variation}_acft_allhrs_UA3_WIND.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P425-225 -obtype AIRCFT -
fcst_var WIND
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/allhrs/${domainReso
lution}_${variation}_acft_allhrs_UA5_WIND.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P625-425 -obtype AIRCFT -
fcst_var WIND
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/allhrs/${domainReso
lution}_${variation}_acft_allhrs_UA6_WIND.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P775-625 -obtype AIRCFT -
fcst_var WIND
```

```
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/allhrs/${domainReso
lution}_${variation}_acft_allhrs_UA7_WIND.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P875-775 -obtype AIRCFT -
fcst_var WIND
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/allhrs/${domainReso
lution}_${variation}_acft_allhrs_UA8_WIND.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P910-875 -obtype AIRCFT -
fcst_var WIND
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/allhrs/${domainReso
lution}_${variation}_acft_allhrs_UA9_WIND.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P1010-910 -obtype AIRCFT -
fcst_var WIND

echo "Calculating Upper Air Wind Direction Statistics"

stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/allhrs/${domainReso
lution}_${variation}_acft_allhrs_UA1_WDIR.txt -v 3 -job aggregate_stat -
line_type VL1L2 -out_line_type WDIR -obs_lev P225-100 -obtype AIRCFT
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/allhrs/${domainReso
lution}_${variation}_acft_allhrs_UA3_WDIR.txt -v 3 -job aggregate_stat -
line_type VL1L2 -out_line_type WDIR -obs_lev P425-225 -obtype AIRCFT
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/allhrs/${domainReso
lution}_${variation}_acft_allhrs_UA5_WDIR.txt -v 3 -job aggregate_stat -
line_type VL1L2 -out_line_type WDIR -obs_lev P625-425 -obtype AIRCFT
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/allhrs/${domainReso
lution}_${variation}_acft_allhrs_UA6_WDIR.txt -v 3 -job aggregate_stat -
line_type VL1L2 -out_line_type WDIR -obs_lev P775-625 -obtype AIRCFT
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/allhrs/${domainReso
lution}_${variation}_acft_allhrs_UA7_WDIR.txt -v 3 -job aggregate_stat -
line_type VL1L2 -out_line_type WDIR -obs_lev P875-775 -obtype AIRCFT
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/allhrs/${domainReso
lution}_${variation}_acft_allhrs_UA8_WDIR.txt -v 3 -job aggregate_stat -
line_type VL1L2 -out_line_type WDIR -obs_lev P910-875 -obtype AIRCFT
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_acft/allhrs/${domainReso
```

```
lution}_${variation}_acft_allhrs_UA9_WDIR.txt -v 3 -job aggregate_stat -
line_type VL1L2 -out_line_type WDIR -obs_lev P1010-910 -obtype AIRCFT
```

run_aircar_template_all_hours.sh

```
# Script Purpose:  Uses stat analysis to collect information from point
# stat files in order to analyze AIRCAR data. It aggregates data from all
# available dates and all available hours.
# Author: Yasmina R. Raby
# Date: 07/22/2010
# Script Name: run_aircar_template_all_hours.sh
# Script Location: ~jraby/Scripts/Stat_Analysis_Scripts/all_hours/
# Script called by: run_Stat_Analysis

variation=$1
domainResolution=$2

echo "Running Stat_Analysis"
mkdir -p ./Summary_byHour/${domainResolution}_${variation}_aircar/allhrs

#If it is NOT a control run, then add an underbar to the WRF variation
type for the Point Stat results directories below.
if [ "$variation" != "CO" ]
      then
            var="_"$variation
      else
            var=""
fi

echo "Calculating Upper Air Temperature Statistics"

stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/allhrs/${domainRe
solution}_${variation}_aircar_allhrs_UA1_TMP.txt -v 3 -job aggregate_stat
-line_type MPR -out_line_type CNT -obs_lev P225-100 -obtype AIRCAR -
fcst_var TMP
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/allhrs/${domainRe
solution}_${variation}_aircar_allhrs_UA3_TMP.txt -v 3 -job aggregate_stat
-line_type MPR -out_line_type CNT -obs_lev P425-225 -obtype AIRCAR -
fcst_var TMP
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/allhrs/${domainRe
solution}_${variation}_aircar_allhrs_UA5_TMP.txt -v 3 -job aggregate_stat
-line_type MPR -out_line_type CNT -obs_lev P625-425 -obtype AIRCAR -
fcst_var TMP
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/allhrs/${domainRe
solution}_${variation}_aircar_allhrs_UA6_TMP.txt -v 3 -job aggregate_stat
-line_type MPR -out_line_type CNT -obs_lev P775-625 -obtype AIRCAR -
fcst_var TMP
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
```

```
./Summary_byHour/${domainResolution}_${variation}_aircar/allhrs/${domainRe
solution}_${variation}_aircar_allhrs_UA7_TMP.txt -v 3 -job aggregate_stat
-line_type MPR -out_line_type CNT -obs_lev P875-775 -obtype AIRCAR -
fcst_var TMP
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/allhrs/${domainRe
solution}_${variation}_aircar_allhrs_UA8_TMP.txt -v 3 -job aggregate_stat
-line_type MPR -out_line_type CNT -obs_lev P910-875 -obtype AIRCAR -
fcst_var TMP
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/allhrs/${domainRe
solution}_${variation}_aircar_allhrs_UA9_TMP.txt -v 3 -job aggregate_stat
-line_type MPR -out_line_type CNT -obs_lev P1010-910 -obtype AIRCAR -
fcst_var TMP

echo "Calculating Upper Air Dewpoint Statistics"

stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/allhrs/${domainRe
solution}_${variation}_aircar_allhrs_UA1_DPT.txt -v 3 -job aggregate_stat
-line_type MPR -out_line_type CNT -obs_lev P225-100 -obtype AIRCAR -
fcst_var DPT
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/allhrs/${domainRe
solution}_${variation}_aircar_allhrs_UA3_DPT.txt -v 3 -job aggregate_stat
-line_type MPR -out_line_type CNT -obs_lev P425-225 -obtype AIRCAR -
fcst_var DPT
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/allhrs/${domainRe
solution}_${variation}_aircar_allhrs_UA5_DPT.txt -v 3 -job aggregate_stat
-line_type MPR -out_line_type CNT -obs_lev P625-425 -obtype AIRCAR -
fcst_var DPT
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/allhrs/${domainRe
solution}_${variation}_aircar_allhrs_UA6_DPT.txt -v 3 -job aggregate_stat
-line_type MPR -out_line_type CNT -obs_lev P775-625 -obtype AIRCAR -
fcst_var DPT
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/allhrs/${domainRe
solution}_${variation}_aircar_allhrs_UA7_DPT.txt -v 3 -job aggregate_stat
-line_type MPR -out_line_type CNT -obs_lev P875-775 -obtype AIRCAR -
fcst_var DPT
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/allhrs/${domainRe
solution}_${variation}_aircar_allhrs_UA8_DPT.txt -v 3 -job aggregate_stat
```

```
-line_type MPR -out_line_type CNT -obs_lev P910-875 -obtype AIRCAR -
fcst_var DPT
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/allhrs/${domainRe
solution}_${variation}_aircar_allhrs_UA9_DPT.txt -v 3 -job aggregate_stat
-line_type MPR -out_line_type CNT -obs_lev P1010-910 -obtype AIRCAR -
fcst_var DPT

echo "Calculating Upper Air Relative Humidity Statistics"

stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/allhrs/${domainRe
solution}_${variation}_aircar_allhrs_UA1_RH.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P225-100 -obtype AIRCAR -
fcst_var RH
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/allhrs/${domainRe
solution}_${variation}_aircar_allhrs_UA3_RH.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P425-225 -obtype AIRCAR -
fcst_var RH
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/allhrs/${domainRe
solution}_${variation}_aircar_allhrs_UA5_RH.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P625-425 -obtype AIRCAR -
fcst_var RH
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/allhrs/${domainRe
solution}_${variation}_aircar_allhrs_UA6_RH.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P775-625 -obtype AIRCAR -
fcst_var RH
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/allhrs/${domainRe
solution}_${variation}_aircar_allhrs_UA7_RH.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P875-775 -obtype AIRCAR -
fcst_var RH
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/allhrs/${domainRe
solution}_${variation}_aircar_allhrs_UA8_RH.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P910-875 -obtype AIRCAR -
fcst_var RH
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/allhrs/${domainRe
solution}_${variation}_aircar_allhrs_UA9_RH.txt -v 3 -job aggregate_stat -
line_type MPR -out_line_type CNT -obs_lev P1010-910 -obtype AIRCAR -
fcst_var RH
```

```
echo "Calculating Upper Air Height Statistics"

stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/allhrs/${domainRe
solution}_${variation}_aircar_allhrs_UA1_HGT.txt -v 3 -job aggregate_stat
-line_type MPR -out_line_type CNT -obs_lev P225-100 -obtype AIRCAR -
fcst_var HGT
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/allhrs/${domainRe
solution}_${variation}_aircar_allhrs_UA3_HGT.txt -v 3 -job aggregate_stat
-line_type MPR -out_line_type CNT -obs_lev P425-225 -obtype AIRCAR -
fcst_var HGT
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/allhrs/${domainRe
solution}_${variation}_aircar_allhrs_UA5_HGT.txt -v 3 -job aggregate_stat
-line_type MPR -out_line_type CNT -obs_lev P625-425 -obtype AIRCAR -
fcst_var HGT
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/allhrs/${domainRe
solution}_${variation}_aircar_allhrs_UA6_HGT.txt -v 3 -job aggregate_stat
-line_type MPR -out_line_type CNT -obs_lev P775-625 -obtype AIRCAR -
fcst_var HGT
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/allhrs/${domainRe
solution}_${variation}_aircar_allhrs_UA7_HGT.txt -v 3 -job aggregate_stat
-line_type MPR -out_line_type CNT -obs_lev P875-775 -obtype AIRCAR -
fcst_var HGT
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/allhrs/${domainRe
solution}_${variation}_aircar_allhrs_UA8_HGT.txt -v 3 -job aggregate_stat
-line_type MPR -out_line_type CNT -obs_lev P910-875 -obtype AIRCAR -
fcst_var HGT
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/allhrs/${domainRe
solution}_${variation}_aircar_allhrs_UA9_HGT.txt -v 3 -job aggregate_stat
-line_type MPR -out_line_type CNT -obs_lev P1010-910 -obtype AIRCAR -
fcst_var HGT

echo "Calculating Upper Air U-Wind Component Statistics"

stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/allhrs/${domainRe
solution}_${variation}_aircar_allhrs_UA1_UGRD.txt -v 3 -job aggregate_stat
-line_type MPR -out_line_type CNT -obs_lev P225-100 -obtype AIRCAR -
fcst_var UGRD
```

```
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/allhrs/${domainRe
solution}_${variation}_aircar_allhrs_UA3_UGRD.txt -v 3 -job aggregate_stat
-line_type MPR -out_line_type CNT -obs_lev P425-225 -obtype AIRCAR -
fcst_var UGRD
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/allhrs/${domainRe
solution}_${variation}_aircar_allhrs_UA5_UGRD.txt -v 3 -job aggregate_stat
-line_type MPR -out_line_type CNT -obs_lev P625-425 -obtype AIRCAR -
fcst_var UGRD
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/allhrs/${domainRe
solution}_${variation}_aircar_allhrs_UA6_UGRD.txt -v 3 -job aggregate_stat
-line_type MPR -out_line_type CNT -obs_lev P775-625 -obtype AIRCAR -
fcst_var UGRD
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/allhrs/${domainRe
solution}_${variation}_aircar_allhrs_UA7_UGRD.txt -v 3 -job aggregate_stat
-line_type MPR -out_line_type CNT -obs_lev P875-775 -obtype AIRCAR -
fcst_var UGRD
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/allhrs/${domainRe
solution}_${variation}_aircar_allhrs_UA8_UGRD.txt -v 3 -job aggregate_stat
-line_type MPR -out_line_type CNT -obs_lev P910-875 -obtype AIRCAR -
fcst_var UGRD
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/allhrs/${domainRe
solution}_${variation}_aircar_allhrs_UA9_UGRD.txt -v 3 -job aggregate_stat
-line_type MPR -out_line_type CNT -obs_lev P1010-910 -obtype AIRCAR -
fcst_var UGRD

echo "Calculating Upper Air V-Wind Component Statistics"

stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/allhrs/${domainRe
solution}_${variation}_aircar_allhrs_UA1_VGRD.txt -v 3 -job aggregate_stat
-line_type MPR -out_line_type CNT -obs_lev P225-100 -obtype AIRCAR -
fcst_var VGRD
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/allhrs/${domainRe
solution}_${variation}_aircar_allhrs_UA3_VGRD.txt -v 3 -job aggregate_stat
-line_type MPR -out_line_type CNT -obs_lev P425-225 -obtype AIRCAR -
fcst_var VGRD
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/allhrs/${domainRe
```

```
solution}_${variation}_aircar_allhrs_UA5_VGRD.txt -v 3 -job aggregate_stat
-line_type MPR -out_line_type CNT -obs_lev P625-425 -obtype AIRCAR -
fcst_var VGRD
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/allhrs/${domainRe
solution}_${variation}_aircar_allhrs_UA6_VGRD.txt -v 3 -job aggregate_stat
-line_type MPR -out_line_type CNT -obs_lev P775-625 -obtype AIRCAR -
fcst_var VGRD
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/allhrs/${domainRe
solution}_${variation}_aircar_allhrs_UA7_VGRD.txt -v 3 -job aggregate_stat
-line_type MPR -out_line_type CNT -obs_lev P875-775 -obtype AIRCAR -
fcst_var VGRD
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/allhrs/${domainRe
solution}_${variation}_aircar_allhrs_UA8_VGRD.txt -v 3 -job aggregate_stat
-line_type MPR -out_line_type CNT -obs_lev P910-875 -obtype AIRCAR -
fcst_var VGRD
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/allhrs/${domainRe
solution}_${variation}_aircar_allhrs_UA9_VGRD.txt -v 3 -job aggregate_stat
-line_type MPR -out_line_type CNT -obs_lev P1010-910 -obtype AIRCAR -
fcst_var VGRD

echo "Calculating Upper Air Wind Speed Statistics"

stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/allhrs/${domainRe
solution}_${variation}_aircar_allhrs_UA1_WIND.txt -v 3 -job aggregate_stat
-line_type MPR -out_line_type CNT -obs_lev P225-100 -obtype AIRCAR -
fcst_var WIND
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/allhrs/${domainRe
solution}_${variation}_aircar_allhrs_UA3_WIND.txt -v 3 -job aggregate_stat
-line_type MPR -out_line_type CNT -obs_lev P425-225 -obtype AIRCAR -
fcst_var WIND
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/allhrs/${domainRe
solution}_${variation}_aircar_allhrs_UA5_WIND.txt -v 3 -job aggregate_stat
-line_type MPR -out_line_type CNT -obs_lev P625-425 -obtype AIRCAR -
fcst_var WIND
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/allhrs/${domainRe
solution}_${variation}_aircar_allhrs_UA6_WIND.txt -v 3 -job aggregate_stat
-line_type MPR -out_line_type CNT -obs_lev P775-625 -obtype AIRCAR -
fcst_var WIND
```

```
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/allhrs/${domainRe
solution}_${variation}_aircar_allhrs_UA7_WIND.txt -v 3 -job aggregate_stat
-line_type MPR -out_line_type CNT -obs_lev P875-775 -obtype AIRCAR -
fcst_var WIND
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/allhrs/${domainRe
solution}_${variation}_aircar_allhrs_UA8_WIND.txt -v 3 -job aggregate_stat
-line_type MPR -out_line_type CNT -obs_lev P910-875 -obtype AIRCAR -
fcst_var WIND
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/allhrs/${domainRe
solution}_${variation}_aircar_allhrs_UA9_WIND.txt -v 3 -job aggregate_stat
-line_type MPR -out_line_type CNT -obs_lev P1010-910 -obtype AIRCAR -
fcst_var WIND

echo "Calculating Upper Air Wind Direction Statistics"

stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/allhrs/${domainRe
solution}_${variation}_aircar_allhrs_UA1_WDIR.txt -v 3 -job aggregate_stat
-line_type VL1L2 -out_line_type WDIR -obs_lev P225-100 -obtype AIRCAR
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/allhrs/${domainRe
solution}_${variation}_aircar_allhrs_UA3_WDIR.txt -v 3 -job aggregate_stat
-line_type VL1L2 -out_line_type WDIR -obs_lev P425-225 -obtype AIRCAR
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/allhrs/${domainRe
solution}_${variation}_aircar_allhrs_UA5_WDIR.txt -v 3 -job aggregate_stat
-line_type VL1L2 -out_line_type WDIR -obs_lev P625-425 -obtype AIRCAR
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/allhrs/${domainRe
solution}_${variation}_aircar_allhrs_UA6_WDIR.txt -v 3 -job aggregate_stat
-line_type VL1L2 -out_line_type WDIR -obs_lev P775-625 -obtype AIRCAR
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/allhrs/${domainRe
solution}_${variation}_aircar_allhrs_UA7_WDIR.txt -v 3 -job aggregate_stat
-line_type VL1L2 -out_line_type WDIR -obs_lev P875-775 -obtype AIRCAR
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/allhrs/${domainRe
solution}_${variation}_aircar_allhrs_UA8_WDIR.txt -v 3 -job aggregate_stat
-line_type VL1L2 -out_line_type WDIR -obs_lev P910-875 -obtype AIRCAR
stat_analysis -lookin ../MET_PointStat/results_${domainResolution}${var}/
-out
./Summary_byHour/${domainResolution}_${variation}_aircar/allhrs/${domainRe
```

```
solution}_${variation}_aircar_allhrs_UA9_WDIR.txt -v 3 -job aggregate_stat
-line_type VL1L2 -out_line_type WDIR -obs_lev P1010-910 -obtype AIRCAR
```

Appendix H. Embedded Scripts: Extract Stat-Analysis Data (Carson)

run_ExtractStatAnalysis

```
#!/bin/bash
# Script Purpose: Run java program that extracts data from Stat Analysis
# files. Also makes directories for results to go.
# Author: Yasmina R. Raby
# Date: 01/11/2010
# Script Name: run_ExtractStatAnalysis
# Script Location: $HOME/Scripts
# Calls Java Programs: $HOME/Scripts/ExtractHourlySFCData.class,
$HOME/Scripts/ExtractAllhoursSFCData.class, DailySFC.class,
UAExtractor.class

# NOTE: This script expects only that the Stat Analysis folders are in
# $HOME/MET_StatAnalysis/Summary_byHour/domain_resolution_type/
# User's home directory is captured dynamically in this script and in the
Java program
echo "What kind of data would you like to extract?"
echo "(1) surface hourly data"
echo "(2) surface data over all days and hours?"
echo "(3) daily surface data for a model and wrf variation?"
echo "(4) upper air data for hour 00Z, hour 12Z, a user specified hour, or
all hours, or daily?"
read choice

if  [ "$choice" == "1" ]; then
      mkdir -p $HOME/results/hours/hourly

      java -classpath $HOME/Scripts ExtractHourlySFCData

elif  [ "$choice" == "2" ]; then
      mkdir -p $HOME/results/hours/allhrs

      java -classpath $HOME/Scripts ExtractAllhoursSFCData
elif  [ "$choice" == "3" ]; then
      mkdir -p $HOME/results/days/sfc

      java -classpath $HOME/Scripts DailySFC
else
      mkdir -p $HOME/results/hours/ua/adpupa
      mkdir -p $HOME/results/days/ua/adpupa

      mkdir -p $HOME/results/hours/ua/aircraft
      mkdir -p $HOME/results/days/ua/aircraft

      mkdir -p $HOME/results/hours/ua/aircar
      mkdir -p $HOME/results/days/ua/aircar

      java -classpath $HOME/Scripts UAExtractor
fi

echo "run_ExtractStatAnalysis is done."
```

Use bookmark pane to go back to main body

Appendix I. Checklist: Collect WRF Evaluation Data – Run WRF Model

The following is a checklist to summarize and track the steps required to produce and collect WRF evaluation data and perform MET evaluations. **Note:** If you are not going to run the WRF and want to work with Passner WRF runs do not use this checklist. Use instead, the checklist in appendix J of the User's Guide.

a. Day 1 - Run the Start Script (**s**), Task #1 on carson to process the WRF initialization data. _________.

b. Day 1 – For kelvin, If a. is completed successfully, run the "**s**", Task #3 on carson to prepare for and run the WRF on mjm.__________. For carson, log onto mjm and proceed with c. below_________.

c. Day 1 – On mjm, run the "**s1**", Task #1 to start the WRF. Note the job number _______.

d. Day 1 - Periodically check the status of the WRF run on mjm using "qsg" alias.____.

e. Day 1 – Run the "**s**", Task #4 on carson to convert the PrepBUFR data._________.

f. Day 1 – Run the "**s**", Task #5 or #6 on carson as needed for downloading MADIS current or archived data._________.

g. Day 1 – Run the "**s**", Task #7 to convert the MADIS ASCII data files to netcdf format._______.

h. Day 2 – Check the status of the WRF run on mjm. If complete, check the presence of the 2 WRF output files in WRF3011/run directory on mjm.________.

i. Day 2 – If the 2 output files are present on mjm, run the "**s1**", Task #2 on mjm to post-process the WRF output.________.

j. Day 2 – When the post-processing is complete, run the "**s1**", Task #3 on mjm to transfer the post-processed data to carson._________.

k. Day 2 - When the transfer is complete, exit from mjm and run the "**s"**, Task #8 on carson to run the Point-Stat application to produce evaluation statistics.______.

l. Day 2 – When Point-Stat is complete, QC the Point-Stat results._______.

m. Day 2 - Archive the Point-Stat result files on the "L" drive in the archive folder._______.

n. Day 2 or beyond – Run Stat-Analysis as needed to produce aggregated results and summaries of statistics for analysis.

Day 2 or beyond – Extract Stat-Analysis results to prepare files suitable for importing into MS Excel and to produce tables and graphs for analysis and publication.

INTENTIONALLY LEFT BLANK.

Appendix J. Checklist: Collect WRF Evaluation Data – Process Passner WRF Runs

The following is a checklist to summarize and track the steps required to collect Passner WRF evaluation data.

a. Day 1 - Confirm that the PrepBUFR data and MADIS observational data have been collected on carson for Passner's case study dates and have been converted to netcdf format .__________.

b. Day 1 – On mjm, copy Passner WRF output files (2) to your WRF3011/run directory._________.

c. Day 1 – On mjm, run the "**s1"** script and select #2 to post-process Passner WRF output. _________.

d. Day 1 – When the post-processing is complete, run the "**s"** script, task #2 on carson to create the appropriate directories for the post-processed WRF output. ________.

e. Day 1 – On mjm, run "**s2"** to transfer the 50 WRF output files to carson.______.

f. Day 1 - On mjm, delete the 50 WRF files from WRFOUT/named date directory/postprd. ________.

g. Day 1 – Exit from mjm and run the "**s"**, Task #8 on carson to run the Point-Stat application to produce evaluation statistics.______.

h. Day 1 – When Point-Stat is complete, QC the Point-Stat results.________.

i. Day 1 – Archive the Point-Stat result files on the "L" drive in the archive folder.________.

j. Day 2 or beyond – Run Stat-Analysis as needed to produce aggregated results and summaries of statistics for analysis.

Day 2 or beyond – Extract Stat-Analysis results to prepare files suitable for importing into MS Excel to produce tables and graphs for analysis and publication.

INTENTIONALLY LEFT BLANK.

Appendix K. Checklist: StatAnalysisChecklist_single_day

Stat Analysis Single Day Checklist

Analyzing Surface and Upper Air data for all hours over one day

Start_Date_______________

Domain	CO	P2	P8	T3	L4	L8	B2
m1o1							
m1o2							
m2o2							

Start_Date_______________

Domain	CO	P2	P8	T3	L4	L8	B2
m1o1							
m1o2							
m2o2							

Start_Date_______________

Domain	CO	P2	P8	T3	L4	L8	B2
m1o1							
m1o2							
m2o2							

Start_Date_______________

Domain	CO	P2	P8	T3	L4	L8	B2
m1o1							
m1o2							
m2o2							

Start_Date_______________

Domain	CO	P2	P8	T3	L4	L8	B2
m1o1							
m1o2							
m2o2							

Start_Date_______________

Domain	CO	P2	P8	T3	L4	L8	B2
m1o1							
m1o2							
m2o2							

Start_Date_______________

Domain	CO	P2	P8	T3	L4	L8	B2
m1o1							
m1o2							
m2o2							

Start_Date_______________

Domain	CO	P2	P8	T3	L4	L8	B2
m1o1							
m1o2							
m2o2							

Start_Date_______________

Domain	CO	P2	P8	T3	L4	L8	B2
m1o1							
m1o2							
m2o2							

Start_Date_______________

Domain	CO	P2	P8	T3	L4	L8	B2
m1o1							
m1o2							
m2o2							

Start_Date_______________

Domain	CO	P2	P8	T3	L4	L8	B2
m1o1							
m1o2							
m2o2							

Start_Date_______________

Domain	CO	P2	P8	T3	L4	L8	B2
m1o1							
m1o2							
m2o2							

Start_Date_______________

Domain	CO	P2	P8	T3	L4	L8	B2
m1o1							
m1o2							
m2o2							

Start_Date_______________

Domain	CO	P2	P8	T3	L4	L8	B2
m1o1							
m1o2							
m2o2							

Start_Date_______________

Domain	CO	P2	P8	T3	L4	L8	B2
m1o1							
m1o2							
m2o2							

Start_Date_______________

Domain	CO	P2	P8	T3	L4	L8	B2
m1o1							
m1o2							
m2o2							

Start_Date_______________

Domain	CO	P2	P8	T3	L4	L8	B2
m1o1							
m1o2							
m2o2							

Start_Date_______________

Domain	CO	P2	P8	T3	L4	L8	B2
m1o1							
m1o2							
m2o2							

Start_Date_______________

Domain	CO	P2	P8	T3	L4	L8	B2
m1o1							
m1o2							
m2o2							

Start_Date_______________

Domain	CO	P2	P8	T3	L4	L8	B2
m1o1							
m1o2							
m2o2							

Use bookmark pane to go back to main body

Appendix L. Checklist: StatAnalysisAggregatedChecklist

Stat Analysis Aggregated Data Checklist

Analyzing Surface and Upper Air Data for all days by each hour or for all hours/days

How to run:

On carson, type:

`run_Stat_Analysis`

THEN ENTER 2 IN RESPONSE TO THE FIRST QUESTION

Then enter the domain and then the WRF variation.

Then enter option `1` for each hour over all days or option `2` for all hours over all days.

Note: It might be best to reserve the more time-consuming m1o1 cases for doing overnight.

All hours, All days (option 2)

Domain	CO	P2	P8	T3	L4	L8	B2
m1o1							
m1o2							
m2o2							

Each hour, All days (option 1)

Domain	CO	P2	P8	T3	L4	L8	B2
m1o1							
m1o2							
m2o2							

Appendix M. Checklist: StatAnalysisSFCHourlyExtractionChecklist

Stat Analysis Surface Data Extraction Checklist

How to run:

On carson, type:

```
run_ExtractStatAnalysis
```

Choose option 1
Enter a model
Enter a WRF variation

The results will be in /results/hours/hourly

Domain	CO	P2	P8	T3	L4	L8	B2
m1o1	☐	☐	☐	☐	☐	☐	☐
m1o2	☐	☐	☐	☐	☐	☐	☐
m2o2	☐	☐	☐	☐	☐	☐	☐

Also performed option 2 for m1o1, m1o2, and m2o2

The results are in results/hours/allhrs

Appendix N. Checklist: StatAnalysisSingleDayADPUPAExtractionChecklist

Stat Analysis Extracting Single Day Checklist

Extracting ADPUPA data for all hours over one day

Start_Date_____________

Domain	CO	P2	P8	T3	L4	L8	B2
m1o1	☐	☐	☐	☐	☐	☐	☐

Start_Date_____________

Domain	CO	P2	P8	T3	L4	L8	B2
m1o1	☐	☐	☐	☐	☐	☐	☐

Start_Date_____________

Domain	CO	P2	P8	T3	L4	L8	B2
m1o1	☐						

Start_Date_____________

Domain	CO	P2	P8	T3	L4	L8	B2
m1o1							

Start_Date_____________

Domain	CO	P2	P8	T3	L4	L8	B2
m1o1							

Start_Date_____________

Domain	CO	P2	P8	T3	L4	L8	B2
m1o1							

Start_Date_____________

Domain	CO	P2	P8	T3	L4	L8	B2
m1o1							

Start_Date_____________

Domain	CO	P2	P8	T3	L4	L8	B2
m1o1							

Start_Date_____________

Domain	CO	P2	P8	T3	L4	L8	B2
m1o1							

Start_Date_____________

Domain	CO	P2	P8	T3	L4	L8	B2
m1o1							

Start_Date_____________

Domain	CO	P2	P8	T3	L4	L8	B2
m1o1							

Start_Date_____________

Domain	CO	P2	P8	T3	L4	L8	B2
m1o1							

Start_Date_____________

Domain	CO	P2	P8	T3	L4	L8	B2
m1o1							

Start_Date_____________

Domain	CO	P2	P8	T3	L4	L8	B2
m1o1							

Start_Date_____________

Domain	CO	P2	P8	T3	L4	L8	B2
m1o1							

Start_Date_____________

Domain	CO	P2	P8	T3	L4	L8	B2
m1o1							

Start_Date_____________

Domain	CO	P2	P8	T3	L4	L8	B2
m1o1							

Start_Date_____________

Domain	CO	P2	P8	T3	L4	L8	B2
m1o1							

Start_Date_____________

Domain	CO	P2	P8	T3	L4	L8	B2
m1o1							

Start_Date_____________

Domain	CO	P2	P8	T3	L4	L8	B2
m1o1							

List of Symbols, Abbreviations, and Acronyms

ACARS	Aircraft Communications Addressing and Reporting System
AIRCFT	Aircraft report message type
AIRCAR	ACARS message type
ADPSFC	Surface weather report message type
ADPUPA	Upper air observation message type
AFWA	Air Force Weather Agency
ANYAIR	Collective alias for AIRCFT and AIRCAR message types
ARL	U.S. Army Research Laboratory
ASCII	American Standard Code for Information Interchange
BCMSE	Bias-corrected mean squared error
BCMSE_BCL	Bootstrap lower confidence limit of BCMSE
BCMSE_BCU	Bootstrap upper confidence limit of BCMSE
BED	Battlefield Environment Division
B2	WRF parameter setting variation designation for the Mellor-Yamada-Janic boundary layer parameterization scheme
CI	Confidence interval
CISD	Computational and Information Sciences Directorate
DAT	Data file type
DPT	Dew point temperature
DTC	Developmental Testbed Center
DUG	Dugway Proving Ground, UT

E10	10^{th} percentile of the error
E10_BCL	Bootstrap lower confidence limit of E10
E10_BCU	Bootstrap upper confidence limit of E10
E25	25^{th} percentile of the error
E25_BCL	Bootstrap lower confidence limit of E25
E25_BCU	Bootstrap upper confidence limit of E25
E50	50^{th} percentile of the error
E50_BCL	Bootstrap lower confidence limit of E50
E50_BCU	Bootstrap upper confidence limit of E50
E75	75^{th} percentile of the error
E75_BCL	Bootstrap lower confidence limit of E75
E75_BCU	Bootstrap upper confidence limit of E75
E90	90^{th} percentile of the error
E90_BCL	Bootstrap lower confidence limit of E90
E90_BCU	Bootstrap upper confidence limit of E90
FBAR	Forecast mean
FBAR_NCL	Normal lower confidence limit of FBAR
FBAR_NCU	Normal upper confidence limit of FBAR
FBAR_BCL	Bootstrap lower confidence limit of FBAR
FBAR_BCU	Bootstrap upper confidence limit of FBAR
FRANK_TIES	Number of tied forecast ranks used in computing Kendall's tau statistic
FSTDEV	Standard deviation of the forecast
FSTDEV_NCL	Normal lower confidence limit of FSTDEV

FSTDEV_NCU	Normal upper confidence limit of FSTDEV
FSTDEV_BCL	Bootstrap lower confidence limit of FSTDEV
FSTDEV_BCU	Bootstrap upper confidence limit of FSTDEV
GRIB1	Gridded Binary Format
HGT	Geopotential height
HPC	High Performance Computer
KSC	Kennedy Space Center, FL
KT_CORR	Kendall's tau statistic
L4	WRF parameter setting variation designation for the 40 vertical levels case
L8	WRF parameter setting variation designation for the 80 vertical levels case
MADIS	Meteorological Assimilation Data Ingest System
MAE	Mean Absolute Error
MAE_BCL	Bootstrap lower confidence limit of MAE
MAE_BCU	Bootstrap upper confidence limit of MAE
MBIAS	Multiplicative bias
MBIAS_BCL	Bootstrap lower confidence limit of MBIAS
MBIAS_BCU	Bootstrap upper confidence limit of MBIAS
ME	Mean Error
ME_NCL	Normal lower confidence limit of ME
ME_NCU	Normal upper confidence limit of ME
ME_BCL	Bootstrap lower confidence limit of ME
ME_BCU	Bootstrap upper confidence limit of ME
MET	Model Evaluation Tools

METAR	Surface aviation meteorological observation
Mesonet	Network of automated weather stations for observing mesoscale phenomena
MODE	Method for Object-Based Diagnostic Evaluation
MS	Microsoft
MYJ BL	Mellor-Yamada-Janic boundary layer parameterization scheme
m1o1	Designates WRF model with horizontal resolution of 3-km (m1) run over domain 1 (o1)
m1o2	Designates WRF model with horizontal resolution of 3-km (m1) run over domain 2 (o2)
m2o2	Designates WRF model with horizontal resolution of 1-km (m2) run over domain 2 (o2)
NAM	North American Model
NCAR	National Center for Atmospheric Research
NCEP	National Centers for Environmental Prediction
NetCDF	Network Common Data Form
NOAA	National Oceanic and Atmospheric Administration
NWP	Numerical Weather Prediction
OBAR	Observation mean
OBAR_NCL	Normal lower confidence limit of OBAR
OBAR_NCU	Normal upper confidence limit of OBAR
OBAR_BCL	Bootstrap lower confidence limit of OBAR
OBAR_BCU	Bootstrap upper confidence limit of OBAR
ORANK_TIES	Number of tied observation ranks used in computing Kendall's tau statistic

OSTDEV	Standard deviation of the observations
OSTDEV_NCL	Normal lower confidence limit of OSTDEV
OSTDEV_NCU	Normal upper confidence limit of OSTDEV
OSTDEV_BCL	Bootstrap lower confidence limit of OSTDEV
OSTDEV_BCU	Bootstrap upper confidence limit of OSTDEV
PrepBUFR	Data in BUFR format prepared/disseminated by NCEP
PR_CORR	Pearson correlation coefficient
PR_CORR_NCL	Normal lower confidence limit of PR_CORR
PR_CORR_NCU	Normal upper confidence limit of PR_CORR
PR_CORR_BCL	Bootstrap lower confidence limit of PR_CORR
PR_CORR_BCU	Bootstrap upper confidence limit of PR_CORR
PRMSL	Mean sea level pressure
P2	WRF parameter setting variation designation for the Purdue microphysics parameterization scheme case
P8	WRF parameter setting variation designation for the Thompson microphysics parameterization scheme case
QC	quality control
RANKS	Number of ranks used in computing Kendall's tau statistic
RAOB	Rawinsonde upper air Observation
RH	Relative humidity
RMSE	Root Mean Squared Error
RMSE_BCL	Bootstrap lower confidence limit of RMSE
RMSE_BCU	Bootstrap upper confidence limit of RMSE
SATA	Serially Advanced Technology Attachment

SP_CORR	Spearman's rank correlation coefficient
TMP	Temperature
T3	WRF parameter setting variation designation for the 3 second time advective step parameterization scheme case
TOTAL	Total number of matched forecast-observation pairs
UGRD	U-component of wind
VGRD	V-component of wind
WIND	Wind speed
WRF	Weather Research and Forecasting model

No. of Copies	Organization
1 PDF	ADMNSTR DEFNS TECHL INFO CTR DTIC OCP 8725 JOHN J KINGMAN RD STE 0944 FT BELVOIR VA 22060-6218
3 HCs	US ARMY RSRCH LAB ATTN RDRL CIM P TECHL PUB ATTN RDRL CIM L TECHL LIB ATTN IMNE ALC HRR MAIL & RECORDS MGMT 2800 POWDER MILL ROAD ADELPHI MD 20783-1197
15 CDs 2 HCs	US ARMY RSRCH LAB ATTN RDRL CIE M J PASSNER B BROWN (3 CDs) Y RABY (3 CDs, 1 HC) J RABY (3 CDs, 1 HC) D KNAPP R FLANIGAN S KIRBY B DUMAIS T JAMESON WSMR NM 88002-5501
1 CD	US ARMY RSRCH LAB ATTN RDRL CIE P CLARK APG MD 21005
1 CD	R CRAIG DAF CIVILIAN HQ AFWA 2WXG 16WS/WXN 101 NELSON DR OFFUTT AFB NE 68113-1023
1 CD	ARMY JOINT SUPPORT TEAM SFAE IEW&S DCGS A ATTN G BARNES 238 HARSTON ST BLDG 90060 HURLBURT FIELD FL 32544
1 CD	T FOWLER NCAR DEVELOPMENTAL TESTBED CENTER P O BOX 3000 BOULDER CO 80307-3000
1 CD	J H GOTWAY NCAR DEVELOPMENTAL TESTBED CENTER P O BOX 3000 BOULDER CO 80307-3000
1 CD	US ARMY RSRCH LAB ATTN RDRL CIE D D HOOCK WSMR NM 88002-5501
1 CD	DR J MCLAY NAVAL RSRCH LAB 7 GRACE HOPPER AVE STOP 2 MONTEREY CA 93943
Total:	28 (1 PDF, 22 CDs, 5 HCs)

INTENTIONALLY LEFT BLANK.